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ON CAPSICUM ANNUUM.

By David Preston.

(An Inaugural Essay, presented to the Philada. College of Pharmacy, 1865.)

Capsicum has been the subject of many experiments, with a view to determine what principle gives activity to the fruit, and whether it is due to a crystallizable substance, alkaline or neutral, or to a resin, and various opinions have been given in regard to it.

Soon after the discovery of alkaloids in the vegetable kingdom, it was stated that this fruit contained one, as will be seen by the following, extracted from M. Oersted's paper in vol. vi., Journal de Pharmacie, for 1820, page 372.

"One of my friends," says M. Oersted, "has also found a new alkali of great acrimony in the fruit of Capsicum annuum. This alkali is but slightly soluble in water and possesses greater capacity of saturation than the alkalies of the same class. It forms with protoxide of lead and muriatic acid a triple salt which preserves all the acrimony of the vegetable alkali."

A few years previous to this statement, (1816,) the fruit was analyzed by Bucholz and Maurach, and the following year by Braconnot.

Bucholz acted upon the fruit with alcohol, evaporated the alcoholic solution to an extract, treated this with ether, and allowed the ether to evaporate; the result he called a "soft acrid resin," or capsicin. Braconnot obtained the same, and called it an "acrid oil."

Prof. Procter, a few years since, made an investigation of the

subject, and found, by adding to an alcoholic solution of the oleoresin a solution of subacetate of lead, a copious precipitate was thrown down, which, when thoroughly washed with alcohol, possessed none of the acrimony of the plant. But that the matter remaining after evaporating the filtered liquid was much more pungent than before.

Mr. Horace B. Taylor, a graduate of the Philadelphia College of Pharmacy, took up the subject for his inaugural essay, which was published in the fourth number of the American Journal of Pharmacy, for 1857. In the course of his experiments he obtained a crystallizable principle, which he supposed to be the true capsicin and active principle of the plant.

As the process adopted by Mr. Taylor was followed by myself for the first experiment, it will not be out of place to mention it here.

The capsicum was exhausted by means of ether,—the ethereal solution allowed to evaporate spontaneously. The resulting oleoresin was dissolved in alcohol, precipitated by solution of subacetate of lead, filtered, a current of sulphuretted hydrogen passed through the filtrate to free it of lead, the solution again filtered and heated to the boiling point to drive off the sulphuretted hydrogen.

This solution was allowed to evaporate spontaneously. When the alcohol had all passed off, it shot out in beautiful crystals, without a mother-liquid.

He states that they were obtained on the coldest day of that winter, and supposed, from other experiments that were made, that it was due to the low temperature, that the crystals were formed. They possessed the acrimony of the plant.

Mr. Heydenrich next considered the subject, (published in the Third Series, vol. vi., American Journal of Pharmacy,) repeating Mr. Taylor's experiments, but could not obtain the crystals. Other experiments were tried by this gentleman to procure, if possible, a crystalline principle, but failed to obtain them.

He concluded that the activity of the fruit was due to two fixed oils, differing from each other in fluidity and color, and that the oil of Prof. Procter contains them both.

1st. In commencing my researches, 4000 grains of capsicum

were packed in a glass percolator, and Ojss. of stronger ether passed through it. This was evaporated, and yielded 778 grains of oleo-resin. Of this, 200 grains were dissolved in f℥iii. of alcohol, sp. gr. ·835, and treated in the manner above mentioned by Taylor. After going through the precipitating process, &c., the solution was set aside for spontaneous evaporation, and, as the alcohol evaporated, a separation took place, resulting in two liquids. One light-colored and viscid, while the other was a dark reddish-brown oil, with a low sp. gr., and floated on the surface of the other in small globules. When the viscid liquid was reduced by evaporation, it was placed in a freezing mixture, when it immediately assumed the crystalline form,—resembling in every respect the description of those obtained by Mr. Taylor, possessing much acrimony, accompanied with a peculiar astringent, leady taste. They were treated for lead by iodide of potassium, with the result of a copious amount of iodide of lead.

It was impossible to free the crystals of the pungency of capsicum; and, to satisfy myself that crystallization was due to the lead salt, the experiment was repeated, taking care, in this case, to entirely free it from lead, by the sulphuretted hydrogen, (which I knew by testing from time to time in the process.) The result was the reddish-colored oil of Prof. Procter—and no crystals.

2d. This oil was dissolved in alcohol, sp. gr. ·835, and passed through animal charcoal, which freed the solution entirely of color. The alcohol was evaporated at a temperature of about 140°, and left an oily liquid, almost colorless at first, but which gradually acquired color by age, until of a dark red tint. It is neutral to test-paper; has an exceedingly acrid, burning taste, which remains for a long time. Concentrated sulphuric acid chars it, and destroys its pungency entirely.

Nitric acid has a peculiar action upon the oil, depriving it of acrimony, without producing any marked effect on the oil itself, which I think proves that the pungency is not due to the fixed oil, but to a principle dissolved in it, the nature of which is yet undetermined. The yield of this oil from capsicum is so small, that I had not enough to make the investigations to decide whether this principle could be separated from it, and to demon-

strate that the pungency really is not due to the oil, of which I have expressed my doubts.

This oil unites with alkalies and alkaline carbonates to form soap, and is lighter than water.

3d. A small quantity of it was placed in a retort, connected with a receiver, (kept cold by snow,) and heat gradually applied until fumes commenced to arise, when it was removed until they subsided, and then again applied. The vapors continued to arise and pass over without being condensed.

More heat was brought to bear, until it commenced to blacken and an empyreumatic odor was given off. The retort was disconnected, and the remaining black oil, on examination, was found to be destitute of pungency, but had an acid, empyreumatic taste, giving a decided acid reaction with litmus paper. The receiver was again connected, and the oil subjected to a high degree of temperature, when acrolein distilled over, proving the presence of glycerin and the fact of its being a fixed oil. This experiment proved, also, that the acrid fumes (so well known when capsicum is heated) cannot be obtained by distillation, as they cannot be condensed at the ordinary pressure of the atmosphere.

4th. The dregs from the ethereal menstruum were dried, again packed in a percolator, and treated with alcohol, sp. gr. ·835, until no longer possessed of color or taste.

This was evaporated to a soft extract, and found to weigh 236 grains, which had the pungent taste of the drug to a marked extent. When treated with ether, this quality was extracted almost entirely, leaving a dark-brown extractive, slightly soluble in water and chloroform, quite soluble in alcohol, but insoluble in ether and benzine. Saponifiable with soda and potassa, and precipitated from its solution by solution of subacetate of lead.

5th. A fresh quantity of capsicum was treated with benzine, (which proved to be an excellent solvent,) the benzine allowed to evaporate spontaneously. When nearly all had passed off, and the liquid became of a syrupy consistence, a crystalline substance began to deposit, of a dark reddish-brown color, surrounded by a mother-liquid of the same color. This was at first thought to be the true capsicin, obtained without any chemical

reagents. The crystals were possessed (in the crude state) of all the fire of capsicum, and well calculated in every respect to deceive. To purify them they were dissolved in alcohol, and the alcoholic solution passed through animal charcoal, which deprived the solution of color; this was carefully evaporated, and resulted in a beautifully white, crystalline fat, with but little odor and a mild, not unpleasant, taste, being entirely freed of the characteristic taste of the plant by the action of the charcoal.

6th. The mother-liquid was next dissolved in benzine and passed through animal charcoal, which deprived it of the red coloring matter, but did not free it entirely of the fat, which could not all be separated before making the solution. By subjecting this to a low degree of temperature, the fat would crystallize, and in this way, by repeated coolings and separation of the fat after each time, the latter was gotten rid of. The remaining oil was of a light amber color, and possessed great acrimony. This differed from the oil in the second experiment in two respects: first, that the color of this oil remains the same while exposed to the air; and, second, that it was more viscid than the other, and became almost solid when subjected to a freezing mixture.

7th. A small quantity of capsicum, in powder, was subjected to distillation; the distillate was very slightly pungent, and had a disagreeable odor. This experiment proves that it contains little or no volatile oil.

Summary.—From my experiments, I have drawn the conclusion that the activity of the plant is not due to an alkaloid, but to a fixed oil, either as a fixed oil, or to a principle dissolved in the oil, which may be volatile, but for isolating which, there has not yet been found a process.

I am strongly inclined to believe the latter is true; and will suggest that it may be decided by procuring a larger quantity of the fixed oil and washing it with repeated small portions of alcohol, diluted, so as not to dissolve the fixed oil, and then separating the pungent principle from this liquid by evaporation and washing with ether; or, by the action of good animal charcoal, as in the process of M. Lebourdais.

AN AUTOMATIC PHARMACEUTICAL STILL.

By A. F. W. Neynaber.

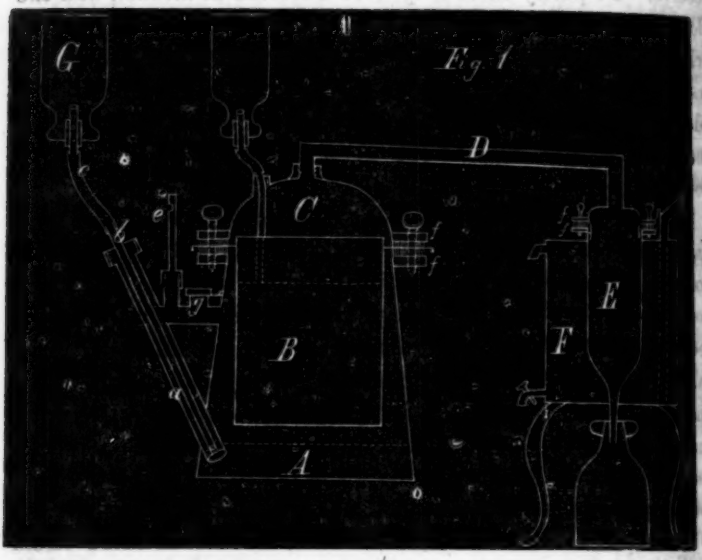

Fig. 1. A, Shows the outer boiler.
B, " " inner boiler.
C, " " dome.
D, " " steam conducting pipe.
E, " " condenser.
F, " " refrigerator.

The outer boiler A is connected by means of the pipe *a*, *b*, and *c* with the feeder G, consisting of a suitable bottle of about one gallon capacity. The pipe *b* is so arranged that the water in the outer boiler will be at *d*. As soon as the surface of the water in A falls below the extremity of the pipe *b*, air entering through *e* will pass through the pipe *b* into the bottle G, and a corresponding portion of water will descend into the boiler A, and so a continuous supply of water will be kept up in the boiler A until the bottle G is empty. *f*, *f* are cast-iron rings, which, by means of screws, press the rims of A and B, and the dome C, having rings of India-rubber between them, together, so as to form a steam-tight joint. As soon as the generation of

steam in the water boiler will be more than necessary, the superfluous steam escapes through the valve *g*.

In case the bottle G should become empty, an alarm pipe, attached to *e*, will give the alarm as soon as the water falls below the extremity of the pipe *a*.

The inner boiler B, made of a suitable size, can be fed, if desired, in the same manner as the outer boiler. On the top of the inner boiler fits also a porcelain evaporating dish, for those cases where the liquid would corrode the boiler. The conducting pipe D is connected with the dome C and the condenser E by means of cast-iron and India-rubber rings and screws, so as to make perfect steam-tight connections.

Without the inner boiler B, the apparatus will be sufficient for making *aquæ distillatæ*, and a perforated diaphragm put near the surface of the water will make the apparatus suitable for distilling medicated waters or essential oils from flowers or herbs.

On this apparatus, after detaching the conducting pipe D, the condenser can be easily cleaned and deprived of the odor of different substances, so that the objection raised against the condensing worm is removed.

Without the dome C, etc., the inner boiler B (screwed tight to the outer boiler A) will be suitable for boiling syrups, etc., also for evaporating, for which purpose a separate dome may be substituted to carry off the steam to a flue. In this case, the dome C should not fit tight, but be slightly raised, so as to leave a space not quite so large as the space in the pipe D, so as to bring on a draught when the pipe D is connected with a chimney flue, by which the generated steam will be rapidly carried off, and so the evaporation greatly favored.

As plainly seen, the quantity of liquid in the apparatus is very small at the time, and, consequently, very little heat is required to bring on distillation, yet the evaporated liquid is instantaneously replaced, and so a continuous distillation kept up; consequently the saving of fuel will be considerable, and this will make the apparatus, together with the safety from scorching, the most suitable one for stoves in drug or apothecary stores, or for gas furnaces.

THE ST. REGIS SULPHUR WATER OF MASSENA, ST. LAWRENCE CO., N. Y.

By Ferdinand F. Mayer.

"The springs are on the verge of the Raquette River, a broad and rapid stream, about a mile from Massena village, which is situated on the Grass River. These two streams, of about equal volume, run almost parallel for many miles, and empty into the St. Lawrence opposite Cornwall Island. The St. Lawrence is only four miles distant from the springs, in a straight line, and the nearest station, on the Great Northern Road from Ogdensburg to Rouse's Point, is at Potsdam, fifteen miles distant. As early as the close of the last century these waters were discovered by surveyors, and they saw the oozy ground around them filled with the hoof-prints of the moose and deer, who visited there on account of the saline qualities of the fountains. The Indians had used them as remedies for ulcerations, it is said, as long as tradition can reach back; and as early as 1815, white people occasionally sought relief from cutaneous diseases by their use. The first settler there was Captain John Polly, a soldier in the second war for Independence, and there he was yet residing at the time of Portfolio's visit. They had a long and pleasant interview, and the captain gave our friend a graphic history of his adventures. In 1822, when Polly was in the vigor of manhood, he purchased forty acres thereon on which are the fountains and the present growing village of Massena Springs; and there he erected the first accommodations for visitors. At about that time a young girl greatly afflicted with salt-rheum came, and was completely healed. A few years later, the Canadian Roman Catholic Bishop, Alexander M'Donald, came there with the "black scrofula," which he had contracted in Egypt. His legs were covered with black ulcers to his knees. He remained a month and was entirely cured. Since then, hundreds afflicted with every description of cutaneous disease, chronic dyspepsia, and diarrhœa, and kindred complaints, have there found relief or positive cures. Such is the general testimony.

"There are two springs, only a few feet apart, one warm and the other cold. The latter is enclosed and surrounded by a spacious covered platform. The other is also enclosed, but is so little used that its surroundings are about as primitive as when the moose and the deer resorted there; of late it has been built over by the embankment of a bridge. Professor Emmons has given the following result of an analysis of the two springs:

	Warm Spring.	Cold Spring.
Chloride of sodium	6·988	6·205
Magnesia	·644	·846
Calcium	1·026	·446
Sulphate of lime	2·794	1·960
Carbonate of lime	1·630	1·100
Hydrosulphuret of magnesia and organic matter,		1·870
	13·082	12·447

"In 1828 the present Harrowgate House was erected on the top of the slope, about forty rods from the river, where the springs were first curbed. In 1848 the spacious brick edifice opposite the Harrowgate House, known as the United States Hotel, was erected by Benjamin Phillips, and both are owned by him. All about has a new appearance. The little village of a dozen houses has grown up within a few years; a bath-house has been erected, and shade trees have been planted. Other and extensive improvements are in contemplation, and soon the Massena Springs will become a delightful summer resort for the healthy as well as the sick."—*Harper's New Monthly, June*, 1856.

The water, as sold in bottles, is stated to contain less of the gas than is the case at the spring, where it presents more of a sparkling appearance. It is at first perfectly clear, and of not unpleasant taste, aside of the sulphurous. Like other similar waters, it becomes turbid when exposed for some time to the air, a portion of the sulphur being precipitated; but this again disappears by the continued oxydising action of the air, and the odor itself is finally lost.

To mix or impregnate the water with carbonic acid is not practicable, since it decomposes the sulphuret in solution, and renders the water opaque. The bottles contain about one quart of water. Its specific gravity at 60° F., taken in a 12½ oz. flask, was found to be =1·0317.

Course of Quantitative Analysis.—Ten litres were evaporated on the sand bath in a Berlin porcelain dish. The residue, dried at 212° F., weighed 38·14803 grammes; dried at 350° F., after treatment with sulphuric acid, (calculated from a portion,) it weighed 33·79 grammes.

Three litres were acidulated with hydrochloric acid, and evaporated in a porcelain dish to dryness. The residue was moistened with hydrochloric acid, evaporated to dryness in an air bath until no more acid vapors were given off; the mass was then treated with water, decanted repeatedly, and the precipitated silica and organic matter separated by a filter from the solution of the salts.

In the latter the iron, phosphoric acid, lime, and magnesia, were determined in the usual manner. In the first (ammonia) precipitate the metal was found separately by volumetric assay.

The alkalies were determined by boiling down one litre with milk of lime, filtering, precipitating the lime in solution by car-

bonate and oxalate of ammonia, then evaporating the filtrate with a small excess of hydrochloric acid, igniting the residue to drive off ammoniacal salts, redissolving in water, precipitating remaining traces of earths with carbonate of ammonia, filtering, evaporating to dryness, and igniting. The residue were the chlorides of the alkalies. The potassa was only separated by a large excess of chloride of platinum. In the mixed chlorides the amount of each was determined by the indirect method, with a volumetric solution of silver.

500 cubic centimetres of the water were drawn off by a syphon, and precipitated by an excess of Tenth normal solution of silver, which carried down chlorine, bromine, carbonic acid, sulphur from sulphurets, and on heating also that of hyposulphurous acid, half of the sulphur from the latter forming sulphuric acid. The excess of silver was removed by Tenth normal solution of chloride of sodium, and the excess of the latter determined by the corresponding solution of silver with the aid of chromate of potassa.

The silver precipitate treated with ammonia was separated into soluble chloride and carbonate, and insoluble sulphuret of silver.

To determine the combined amounts of sulphurets and hyposulphite, several quantities of 500 cc. were measured with a dilute solution of iodide of starch. Neither the silver nor this test can be used to determine them separately. For, one equivalent of iodine, while it substitutes one eq. of sulphur in a sulphide or sulphuretted hydrogen, oxydises four eq. of sulphur in hyposulphurous acid to one eq. of pentathionic acid. On heating a solution of a hyposulphite with nitrate of silver, half of the sulphur only is carried down as sulphuret of silver, the other half being oxydised to sulphuric acid.

Another portion of the water was precipitated with a neutral solution of chloride of cadmium, and the filtrate measured with the solution of iodide of starch. This last amount, corresponding to hyposulphurous acid, deducted from that found for the water previous to the treatment with cadmium, leaves the amount of iodine corresponding to sulphurets.

A portion of the hot solution from which silver had precipitated chlorine and sulphur, was acidulated with hydrochloric acid, and precipitated with chloride of barium. The sulphate of baryta

obtained, less that corresponding to one-half of the hyposulphurous acid, gave the amount of sulphuric acid.

To a graduated flask containing 850 cc. of the water, was added a solution of chloride of barium and ammonia; the mixture, after being allowed to settle, was carefully decanted, the precipitate twice washed by decantation, then treated with hydrochloric, and afterwards with sulphuric acid, and the sulphate of baryta collected and weighed. This gave the baryta corresponding to the sulphuric acid *plus* carbonic acid. *The whole of the hyposulphite and sulphurets remained in solution.*

Through a measured flask of the water a current of washed hydrogen gas was conducted as long as any sulphuretted gas was being carried off. The water was then measured with iodide of starch solution; the loss, as compared with the fresh water, gave the quantity of free sulphuretted hydrogen.

Another quantity of the water was mixed with a neutral solution of sulphate of manganese, and then treated with hydrogen. The gases, as evolved, were passed through an ammoniacal solution of nitrate of silver. The resulting sulphuret of silver represented free sulphuretted hydrogen plus the acid in the hydrosulphate of the sulphuret (of sodium); and the quantity of this half-combined sulphuretted hydrogen was found by deducting the amount of free sulphuretted hydrogen lost in the first treatment with hydrogen from that found in the second; and the amount of alkaline sulphuret by deducting the latter amount from the sulphur precipitated as sulphuret of cadmium.

The bromine was determined by extracting a portion of the original residue obtained by evaporating ten litres, with alcohol, and comparing in the residue from the evaporation of the alcohol the coloration of chloroform by chlorine water, first with a solution of chloride of sodium, and then with a weak solution of bromide of potassium of known strength. No iodine was present, nor were any rare metals noticeable.

In reference to the presence of hyposulphites, I should say that in several of the analyses of the Virginia Springs certain bodies and reactions are mentioned and referred at a venture to organic sulphur compounds which may as well be explained by the presence of this same acid.

One thousand parts of the St. Regis water contain—

Oxyd of Calcium,	= 0·46280	
		viz. 0·43045 as $CaO\ SO_3$.
		0·03235 as $CaO\ 2CO_2$.
Sulphuric acid	= 0·64846	
		viz. 0·03382 as $NaO\ SO_3$.
		0·61464 as $CaO\ SO_3$.
Carbonic acid	= 0·05535	
		viz. 0·05084 as $CaO\ 2CO_2$.
		0·00451 as $FeO\ 2CO_2$.
Magnesium	= 0·13123	
		viz. 0·12973 as Mg Cl.
		0·00150 as Mg Br.
Sodium	= 0·69767	
		viz. 0·53809 as Na Cl.
		0·08949 as $NaO\ 2SiO_3$.
		0·00964 as $2NaO\ PO_5$.
		0·01945 as $NaO\ SO_3$.
		0·04090 as $NaO\ S_2O_2 + NaS$.
Silicic acid (+ org. imp.)	0.07100	
Phosphoric acid	0·01333	
Ferrous oxyd	0·00387	
Potassium	0·00457	
Sulphur	0·07476	
		viz. 0·0288 as $S_2\ O_2$.
		0·0173 as free HS.
		0·0146 as half-combined HS.
		0·0140 as NaS.
Bromine	0·01005	
Chlorine	1·21725	
		viz. 0·82976 as NaCl.
		0·38745 as MgCl.
		0·00414 as KCl.
	3·39034	

Residual sulphates 3·379.

These constituents may be arranged in the following manner:

A—in one Litre.		*B—in one Gallon.*	
	(A.)		(B.)
Chloride of Sodium,	1·36795 Grammes,	79·692	Grains.
Chloride of Potassium,	0·00871 "	0·508	"
Chloride of Magnesium,	0·51308 "	29·927	"
Bromide of Magnesium,	0·01155 "	0·673	"
Bicarbonate of Lime,	0·08319 "	4·852	"
Bicarbonate of Iron,	0·00838 "	0·488	"
Sulphate of Lime,	1·04116 "	60·931	"
Sulphate of Soda,	0·06003 "	3·501	"
Phosphate of Soda,	0·02263 "	1·320	"
Hyposulphite of Soda,	0·07210 "	4·205	"
Sulphuret of Sodium,	0·02410 "	1·405	"
Silicate of Soda, and organic compounds,	0·19160 "	11·176	"
	3·40448	198·678	
Sulphuretted Hydrogen.	*a* free, 0·0155 Grammes, *b* half combined, 0·0175 "	22·373, c. c.	

Per Gallon, 5·307 Cubic Inches.

PHARMACEUTICAL NOTES.

By Ferdinand F. Mayer.

Calabar Bean—Its Alkaloid.—Some sixty beans were kindly contributed by Prof. Torrey towards the preparation of the alkaloid. A preliminary examination proved that the base, as well as its salts, were colorless, and whenever they became colored, a loss was sustained. To avoid evaporation as much as possible, I adopted the following method: The beans were reduced to moderately fine powder, and repeatedly digested with 85 per cent. alcohol, and then displaced with alcohol of the same strength. The tincture was subjected to distillation, while the residual powder was boiled with dilute sulphuric acid until all of the starch had disappeared. The residual extract from the tincture and the acid solution were then mixed, filtered and precipitated with iodohydrargyrate, the precipitate washed by decantation, transferred to a flask with good stopper, in which it was treated with a strong solution of protochloride of tin in tar-

trate and bicarbonate of soda, and then with ether. The colorless ethereal solution was distilled, the soft residue redissolved in dilute sulphuric acid, and again treated with ether and ammonia. The alkaloid was now obtained as an almost colorless mass, readily combining to form crystalline salts, but without any distinctive reactions. On dissolving the impure alkaloid in acids, a reddish-brown substance separates, which, from the experiments made with it, may be assumed to be inert.

The following are experiments made last winter by Dr. Haigh, of Michigan, for the prize essay at the College of Physicians and Surgeons, and which have not been published. The form in which the alkaloid, prepared as above, was used, is the hydrochlorate; the other preparations were made by Mr. Haigh:

"From the perusal of Dr. Christison's account* I was led to believe I had a very energetic poison to deal with, and that in my experiments it would be necessary to exercise the greatest care in order to get its maximum effect without producing death. I therefore commenced experimenting with small doses, and as about 12 grains had produced such positive effect upon Dr. Christison, I commenced with 5 grains of the bean. This quantity, in five powders, was given, on a piece of meat, to a dog which weighed 17 lbs.

The animal was closely observed for two hours, but I could detect no symptoms indicating any action of the poison. The dog was then well fed for two days, in order that all influence, if any there had been, might pass off, and then a second dose of 10 grains was administered in meat as before. This, as in the first experiment, produced no effect whatever. Referring to the article, by Thos. Nunnelly, in the London Lancet, I found that he had obtained well-marked poisonous effects upon a dog in 40 minutes from a dose of 12 grains of the bean. The symptoms he observed were: it was weak and had a desire to lie down, but would appear frightened if told to do so. The pupils were a little contracted, an effect said to be characteristic of this poison. Thinking there might have been some mistake in my experiments, I let the dog rest one day without food, and then gave him 15 grains of the powdered bean with meat. This time it produced some decided physiological effects. In 20 minutes after the animal had taken the powder there was a manifest drooping of the ears and tail, and he walked about as if very tired. In 30 minutes there was a little staggering in his gait, and a wandering about as if the air of the room was oppressive. When spoken to he would brighten up, but appeared immediately to forget it. No contraction of the pupils occurred. In about two hours he went to sleep, and was the next morn-

* See Pharm. Journal, xiv. p. 470.

ing as bright as ever. I next tried a much smaller dog (a black and tan terrier weighing a little over 11 pounds) who had been fed on meat only for about a week. To this dog 15 grains of powdered bean was given, and as the animal was so much smaller than the former one I expected to see a more decided action than before; to my great surprise the dose did not seem to disturb him in the least. There was no contraction of pupils, nor any action whatever that I could ascribe to the bean. Finding Nunnelly had obtained the most marked results from 35 grains given to a small dog, I gave this little dog a similar quantity (35 grains) the next day. To my great surprise from this also I got no effect. Expecting that so large a quantity of the poison would manifest itself in some manner, I watched the animal closely for two hours, but no effects were visible, unless it might be sleepiness; he slept quite soundly during the afternoon, which is rather unusual for a little terrier dog.

My experiments with the bean itself thus far seeming to contradict one another, and to produce no very marked results, I concluded to try to get the active principle in a more concentrated form. Accordingly four beans from my now limited stock were reduced to powder, and exhausted by treating with successive portions of boiling alcohol, and the tincture thus obtained evaporated to dryness. The result was a dark brownish mass of a resinous character, which weighed a little over 2 grains. This mass was divided into two equal portions, one of which was administered to the little dog, upon which the dose of 35 grains of the bean had produced no poisonous effects a few days before.

For the first 20 minutes nothing unusual was noticed, but at the end of that time he begun to show a little uneasiness, which was manifested by drawing himself backwards. In 30 minutes there was manifest disturbance, and at 32 minutes after taking the dose there was a copious evacuation of the intestines. In 35 minutes there was another large, watery stool, accompanied by great tenesmus, with abortive attempts at vomiting. His walk, at the end of 40 minutes, became staggering, and his movements uncertain. He did not seem weak, but lacked the power of associating muscular action. He would follow me in an uncertain course as if intoxicated; his ears were drawn back, and he evidently felt a great degree of uneasiness. Drinking some water seemed to allay his nausea, but produced slavering. These symptoms continued to increase for three hours, accompanied by efforts to discharge fœcal matter, when the tenesmus seemed to abate while the other symptoms increased. At three hours and ten minutes after taking the poison he could not stand still, but his body moved from side to side. The pupils were very sensitive; when exposed to a strong light from the window they would alternately contract and dilate, contracting to not more than a line in diameter, and then suddenly dilating to their fullest extent, would remain so for an instant and then gradually contract again, the contraction being much slower than the dilatation. Soon after the intestinal disturbance had

abated to some extent, the flexor muscles were thrown into a state of tonic contraction, the back was arched upwards and the tail drawn tightly down and close under his belly. The hind legs were thrown forward, while the fore legs were set backward, so that the points of support were changed, the hind feet being in front of the fore feet. His head was flexed on his neck in such a manner as to direct the eyes downwards. This posture was maintained so long as he remained quiet, half sitting and half leaning against the wall, the only position in which he seemed at all comfortable.

When he would start to go across the room, for he never was quiet but for a moment, he would, as if by a strong effort, draw up his head and straighten out his legs and start off in a quite lively manner, but before he would proceed far the muscles would again contract, his head be drawn, and he would bring up against the side of the room, a table leg or other obstacle with force enough to throw him down. After resting a moment he would make another attempt, but with no better success. He did not seem inclined to lie down, indeed he acted as if unable to do so. He would sometimes sit down, not in the usual manner, but with his hind legs projecting out in front of his face and his weight resting on the lower portion of his back.

These effects continued until 5 hours and 45 minutes after taking the poison, when he laid down and seemed disposed to sleep, whether from exhaustion or the effects of the dose I cannot say.

During all this time there was not a whine or a groan to indicate that he suffered pain, and the breathing appeared to be perfectly natural.

I left him, trusting that he would sleep and that I should find him much better in the morning, but he died during the night. Autopsy, 12 hours after taking the poison, showed no lesion whatever. The brain, lungs, stomach, intestines and mucous surfaces appeared in a perfectly normal condition.

I next tried the alcoholic extract upon a full grown young rabbit, placing 1-16th of a grain of it under the skin. In 10 minutes there was an evacuation of the bowels, also twitching of the muscles of the face, and a kind of munching motion of the lips. In 15 minutes there was a general tremor of the whole body, as if it felt cold. In 20 minutes it manifested great prostration, and could not stand quietly, but would squat down, as if dizzy, when it attempted to move. At the end of 25 minutes the heart beat very rapidly and irregularly, the breathing was very quick, being about 80 times in a minute, while lying flat upon the table. In 30 minutes the contents of the bladder was evacuated, and efforts were made as if to vomit. The eyes remained wide open, and the ears pointing forward. He twice made a peeping noise as if in pain, and got up and staggered across the table. When 35 minutes had elapsed after the exhibition of the dose, the animal seemed to improve; the breathing was less frequent and he could sit up. The action of the heart and lungs

became gradually slower and more regular, and after a general shiver of the whole frame, it, at the end of 70 minutes, seemed inclined to sleep. All the following day the animal was in a sleepy condition, but on the day following it ate freely and seemed well. A similar experiment was tried with a pigeon, one-twentieth of a grain of the extract was placed under the skin of the bird. Its effects were manifest in 2 minutes by a snapping of the bill and a rapid opening and closing of the eyes, as if striving to clear them of dust, and a shaking of the wings and whole body. In 5 minutes the muscles of the legs were paralyzed, and very rapid breathing, which did not seem to fill the lungs. In 8 minutes the wings and neck were paralyzed, and at the end of 10 minutes the bird was dead. Opening the body at once, I found the heart still beating and the lungs filled with air. Dr. Christison attributes death from the poison mainly to paralysis of the heart, but from this experiment it would appear that death was the result of a paralysis of the whole muscular system, involving the respiratory muscles, and that the heart ceased to beat only when venous blood began to circulate in the left side of the organ. In order to test the more direct action of the poison upon the heart, I determined to inject it into the vein of a dog. Having a small portion of the hydrochlorate of physostigmia dissolved in glycerin, I took a portion of the solution, equivalent to $\frac{1}{2}$ of a grain of the salt, and diluted it with water until it would flow freely from a syringe. The femoral vein of a dog, weighing 14½ lbs., was opened and the liquid injected. Respiration ceased instantly. The muscles became perfectly lax, and there was not a motion or the slightest evidence of pain. Placing my hand on the region of the heart I found it beating tumultuously, but it gradually became slower and in two minutes it ceased altogether. The tongue and mucus membrane of the mouth and throat became quite blue as filled with unaerated blood. The pupils were not contracted. *Post Mortem* examination showed no congestion of the brain, stomach or intestines, which were in a perfectly natural condition. Both sides of the heart were full of blood, and the aorta, down to the bifurcation, perfectly empty. The portal system was tinged with blood, and the inferior vena cava was distended to its utmost extent. This experiment showed that the heart was not immediately paralyzed.

Thinking its action might possibly be similar to that of woorari, I tried the experiment, so successfully performed by our Professor in Physiology. Injecting a portion of the solution of hydrochlorate of physostigmia into the femoral vein of a dog, I immediately set up artificial respiration by introducing the nozzle of a bellows into the trachea; the heart continued to beat, as in the previous experiment, for two or three minutes, but I could not prolong its action indefinitely as can be done in cases of poison by woorari.

From the experiments I have tried on these animals it would seem that

the bean itself given in powder is very uncertain in its action. That in cases where digestion was imperfectly performed, or the bowels were actively purged, or in cases where vomiting occurred, the poison showed the least effect. It is my opinion that the active principle is in such small quantities, and intermingled with such a quantity of starch and other inert matter, that unless the digestion be good, perfect, and absorption rapid, its fatal effects are seldom manifested, for in all cases where I used the active principle in concentrated form, extract or hydrochlorate of physostigmia, the experiments uniformally showed the poisonous action. From a number of experiments, made with both the alcoholic extract and hydrochlorate of physostigmia dissolved in glycerine, on dogs, cats, birds and rabbits, I find applications directly to the eye will produce a contraction that is marked and continuous for longer or shorter time, according to the susceptibility of the eye. Its application to the eye seems to be attended with some irritation, whether it be used in a watery solution or in glycerin."

Oabig Bark.—Among the many drugs of doubtful derivation that are sometimes offered in this market, is a yellow bark, stated to be of Japanese origin by the irregular broker who offered it to our friend, Geo. C. Close, Esq. An examination proved the yellow color to be due to a large percentage of berberina, while there is also present a colorless alkaloid, and a higher and a lower saponaceous glucoside. The size of the pieces offered for inspection, some of them several feet in length and breadth, suggested this to be the bark of a plant belonging to the only family, probably, possessing trees of a corresponding size,—that of the Anonaceæ,—and recalled, that a bark identical, from the description of its outer and chemical properties, was described by Dr. Stenhouse, (Pharm. Journ., xiv. p. 455,) and by Dr. Daniell, (*Ibidem*, xvi. p. 398,) referred to *Unona* (*Cadcline ?*) *polycarpa*, DC.,—a tree indigenous to Sierra Leone and Soudan, and known in England as *Abeocouta Bark*. Various accounts are given of its medicinal properties, it being a remedy of great repute in the treatment of indolent ulcers and chronic leprous sores of the extremities, characteristic of the tropics, as an external application, in the form of a coarse powder or decoction. Very extensive use is also made of it on account of its dyeing qualities; and the same bark is supposed to have been introduced for such purposes in England as early as 1787. From the description of Stenhouse and Daniell, little doubt is left on

my mind that this yellow bark, of which a very large quantity still remains unsold, is identical with the Abeocouta bark, and should at least be tried for similar purposes.

As regards the proximate principles of this bark, they are in every respect, except proportion, analogous to those of the officinal Berberis, from which latter I have lately separated the pure saponaceous glucoside, and also to those of *Caulophyllum thalictroides*, which latter, however, contains no trace of berberina or any other yellow coloring matter. As to the white alkaloid of Berberis,—oxyacanthia,—as prepared by the former method, it differs from that of *Hydrastis* and *Caulophyllum* only because it contains a considerable quantity of the kinovin-like, lower glucoside of these plants, which is especially represented very largely in *Caulophyllum*.

Sacred Bark. Under this name the aromatic bark of some large oriental tree has been offered here, and has been referred by several to a Laurinea. It occurs in flat, irregular, heavy pieces, from one-half to an inch in thickness, bearing the marks of a large axe or similar sharp cutting instrument. It has a foliated pale reddish yellow liber, covered with a more or less resinous, reddish envelope and a corky layer, which is deep brown beneath and rough and paler brown, or sometimes ash-colored, without. It has a not over strong odor of Peruvian balsam, or rather of a mixture of cinnamon and sassafras. The outer bark burns with a smoky flame like incense. Mr. Kramer, of Philadelphia, suggested that it resembled storax bark. In fact, as I afterwards found on examination, it contains a soft resin with the odor of storax, but rather rancid, and on being digested in a warm solution of carbonate of soda yields principally cinnamic acid, which, when precipitated from the alkaline liquid by means of sulphuric acid, at once gives the odor of bitter almonds with permanganate. While, therefore, this drug in all probability belongs to a liquidamber, it has no resemblance to what is ordinarily known as storax bark, cortex thymiamatis, as described by Guibourt and others, but bears the greatest resemblance to the description of the trunk-bark of *Liquidamber altingiana*, Blume, as given by Lindley, (*Flora Med.*, p. 321,) in Hayne's *Arzney*

pflanzen, (bd. xi. fol. 26) and especially with that of Noronha, (*Verh. Batav. Genootsh.*, v. 2, p. 1–9) who describes it as follows:

"Arbor est procera, nubium æmula, erectissima, ad altitudinem lucentorum pedum vel magis majestuose assurgens.—Cortex tegens partim est glaber, partim verrucosus, externe cinereus, interne obscure rubens, cum libra dilute rufescente, odorato, sed non tanta aromaticitate præditus ac in radice. Sapor corticis est asper, amaricans, resinosus, balsamicus. *Lignum* est subrubrum, glabrum, solidum, compactum, madidum, succulentum, ponderosum, *oleo aromatico resinoso imbutum, quod sponte per rimulas varias ad superficiem affluit, vel per incisiones acinacibus Javanorum factas, qui sedulo hanc resinam colligunt, ut odoramentis et topicis medicinalibus inservat.* Oleum effluens consistentiam mellis et colorem primum habet; postea vero fissuris corticis congrumatum, parum albescit, translucidumque apparet cristalli ad instar; guttæ præsertim, quæ scobem non tangunt."

I have added the description of the wood and balsam which this tree produces, and which account was confirmed by Reinwardt in 1828 (Nees v. Esenbeck, *Med. Botanik*, i. p. 335. Hayne, *l. c.*) because it is not mentioned in that elaborate paper of Mr. Hanbury on storax (*Pharm. Journal, xvi.* p. 423, 465.) This authority rejects as improbable the belief that one species of liquid storax, known in Oriental commerce, as produced in the Red Sea or Indian Seas generally, but assumes that it comes to India by way of Alexandria and Suez. But the similarity of the name under which storax appears in the records of the Port of Bombay, i. e., *Rose Malloes*, with the Malay and Javan name of L. altingiana, which is Rasamala, certainly suggests some connection. Petiver's geography was no doubt faulty; yet Reinwardt and Noronha state from personal observation that there are forests with many thousands of these balsam trees from which liquid storax was collected. The latter author, after noticing the words of Petiver, as quoted by Geoffroy, continues: Huc usque descriptio arboris styracem liquidum exhibentis omnes latuit, quam et ego arten tissime videre cupiebam, aliis notitiis evidentibus ductus. Hodie dicere audeo, oculis meis fidem præstans, styracem

liquidum officinarum ex vera arbore Rasamala fluere; ab Arabibus *Rasimmala* legitime dicta, a Papuanis *Russimal*, a Persianis *Miha*, et a Cochinchinensibus Roza-malla. Omnes hujus partes arboris excisæ succum lachrymosum resinosum fundunt odoratissimum, *qui est verus styrax liquidus officinarum*, ab Arabibus depuratus et defœcatus, atque ex Moka et Ispahan in Europam allatus. Resina apud omnes nationes orientales magno habetur pretio."

And, lastly, after refuting the statement of Rumpf, that the tree was indigenous to Zeylon and the Malabar Coast and that the wood was thence brought to Java, Noronha says explicitly that while it was found in neither of those places, yet it grew most certainly in Java, Cochinchina and *several islands of the Red Sea*.

If, as I hope to be able to determine more fully hereafter, this bark should really be found to come from the source to which I have ascribed it, it may become another interesting inquiry to decide whether it be also the *narcaphthon* of Dioscorides, under which name the ordinary storax bark has been supposed to be understood, but which is not an Indian drug.

New York, April, 1865.

THE OFFICINAL FLUID EXTRACTS.

By the Editor.

Will the officinal fluid extracts go out of use owing to the high price of alcohol, or can we have some authoritative modifications of the formulas by which we may make them at a more reasonable cost? If the latter, shall the change be in the quality of the menstruum, or in the manner of applying it, so as to reduce the quantity requisite? Can there be a convocation of the Committee of Revision to authorize some new method or modifications of the present recipes? These are questions which have doubtless occurred to many others besides ourselves, and are of sufficient importance to warrant an earnest consideration. As early as before the last meeting of the Association, Dr. Edward R. Squibb conceived the idea of using four parts of any given drug

to make three parts of its fluid extract, operating by direct percolation by the officinal directions, and using only the first liquid that passes, but modifying the manner of proceeding, in some cases, so as to insure the maximum solvent effect from the menstruum. This suggestion of Dr. Squibb was before referred to at page 405, vol. xxxvi. of this Journal. Since that time, he has added further to the evidence in favor of such a plan by careful examinations of the products and residues. The paper and process of N. Spencer Thomas, given in our March number, shows that this subject is engaging other minds; and more recently, in reply to a letter referring to this subject, we received the following reply:

Extract from a letter from Dr. E. R. Squibb of Brooklyn.

"Yours of the 9th came duly, and I am glad the spirit moved you to write, even infrequent as it is, since it stirs me up to find time to reply. I do feel a very great interest in the extracts and fluid extracts, and have a strong conviction that it is the duty of the Committee of Revision to meet and adopt some plan whereby these preparations may be saved to the medical profession. If that Committee lets the present officinal formulas stand till the revision in 1870, not only the formulas will be dead letters, but the value of the preparations will be sacrificed in their popular use. I believe that even now few use the officinal processes, and those who do cannot sell the articles they make in consequence of the enormous cost. I am willing to work in the matter, but not independently of, much less against, the Pharmacopœia; and Taylor's timely suggestion [at Cincinnati] that the publication of my advice and experiments might tend to weaken the influence of the Pharmacopœia, saved me from doing something very much like what I have since criticized Maisch for,—only that I trust I should never have advised the adoption of my views in practice until justified and authorized by the Committee of Revision. I feel sure that a practical plan could be obtained, by a little labor, whereby preparations of the same practical value could be obtained with the use of less than half the [quantity of] menstruum, and yet with the sacrifice of a comparatively insignificant portion of the drug; but am also equally well convinced that no general rule like the present one can effect this result. Each drug must be worked out by itself, and this done, the process will be found simple and easy. With regard to N. Spencer Thomas' plan, it is no news to say that it is a good one for some drugs, as senna, belladonna, aconite, etc., but for others, such as rhubarb, colchicum seed, nux vomica, jalap, etc., it is very imperfect, if not impracticable; and as to its being patentable, even as a novel adaptation of a new purpose, I do not for

a moment believe it, since I, doubtless in common with many others, have for years used hydraulic and other pressure for precisely the same purposes and in the same way. For instance, I know of no way to make the officinal extract of jalap with the proper due proportion of watery extract in it, *upon the large scale*, without using Thomas' plan; and I have used it, and with hydraulic pressure, too, for at least four years past. To moisten the dry jalap powder with alcohol and attempt to press it is futile and useless, because the resin, thick from solution in a small quantity of spirit refuses to flow out, and you might as well try to press the white turpentine out of fine sawdust to the point of practical exhaustion. But after the resin is well washed out by percolation with its proper solvent, the residue, no matter how coarse the solvent within reasonable bounds, if in large quantities, will either absolutely refuse percolation by water, or will percolate so slowly that fermentation sets in long before the prescribed amount of percolate can be obtained. The remedy is to moisten the jalap (after the alcoholic percolation is finished) and submit it to pressure repeatedly, until the press liquors yield, on evaporation, about twice the weight in watery extract that has been previously obtained of alcoholic extract. That is to say, a specimen of jalap which yields, by a critical application of the officinal process, 40 per cent. of officinal extract, will yield about 13 or 14 per cent. of resin to alcohol."

We regret Dr. Squibb's unwillingness to publish his results, without authority from the Committee of Revision, and believe it would be better to ventilate the subject in print by giving practical results as a basis upon which to justify a convocation of the Committee, if it be possible. We have thus called attention to this subject, and shall be pleased to receive comments from other observers and thinkers who may be disposed to communicate their views or results.

ON PIL. FERRI CARBONATIS AND P. FERRI IODIDI.

By P. W. Bedford.

[In a letter recently received from Mr. P. W. Bedford, of New York, the following remarks occur, which, with permission, are inserted in the *Journal*.]

"I send you a sample of Pil. Ferri Carbonatis made some three months ago, in which the weight of honey and sugar are exchanged, or in other words *three* troyounces of sugar and *two* troyounces of honey. Mr. Neergaard uses the proportions of *four* of sugar to *one* of honey.

You will also find some Pil. Ferri Iodidi made by the following formulæ, of which I spoke to you last September:

Take of Iodine, eighty grains.
Reduced Iron, forty grains.
Water, twenty-five minims.
Honey, thirty grains.
Marshmallow, in fine powder, one hundred and twenty grains.

Rub the Iodine in a mortar to a fine powder, adding first the water, then the honey, and afterwards the reduced iron in portions and triturate until the iodine is entirely converted into iodide. Add the marshmallow, and, having formed a pill mass, divide into ninety-six pills. Coat them with tolu as directed in the Pharmacopœia. I also send some made by a friend (Dr. Wm. B. Little) by the Pharmacopœia process, made with half the quantity of gum and equal parts of marshmallow and liquorice root.

Blancard's pills, when cut, have a light brown surface, those of the U. S. Pharmacopœia have a dark brown, almost black, surface."

The Vallet's mass, at this date, (six months since it was made,) is of good consistence and color, no tendency to crystallize and be gritty is noticed. The original recipe was five ounces of honey (Ph. 1840,) in 1850 it was made as at present. Others besides Mr. Bedford have increased the proportion of sugar to avoid deliquescence. There is no doubt that the Pharmacopœia proportions are best calculated to preserve the carbonate from oxidation, but the liability to attract moisture in damp weather, due to the honey, is an inconvenience seriously interfering with their long continued use, unless kept in a bottle as they should be.

The iodide of iron pills, sent by Mr. B., are of good consistence, and appear perfectly protected at this date. We have some of these pills, made by the U. S. Pharmacopœia process four years ago, that are equally perfect, although they have not been kept sealed. The suggestion of Mr. Bedford has reference to convenience of dispensing, and to the consistence of the mass, which the gum of the Pharmacopœia probably makes a little too elastic. These suggestions do not alter the strength or medicinal

qualities of these pills, and, therefore, are admissible, if pharmaceutists desire to vary these recipes.—Ed. Am. Journ. Pharm.

PREPARATION OF PEROXIDE OF BARIUM.

By B. C. Brodie.

Peroxide of barium, prepared by passing oxygen gas over heated baryta, is useless for many purposes, because the oxidation of the baryta is never entirely accomplished, and the product contains a considerable amount of oxide. The first step to the preparation of the pure peroxide is that of the raw materials.

When oxygen gas is carried over a piece of baryta, heated in a porcelain tube, the absorption of the gas immediately takes place with great rapidity; and when the heat is properly regulated, no trace of oxygen escapes from the apparatus. It is, nevertheless, very difficult, however long the action of the oxygen may be continued, to prepare a peroxide in this manner which contains more than 6 parts oxygen to 100 parts of baryta. The theoretical amount of oxygen required for the formation of peroxide, is 10·46 parts to 100 baryta.

By far the most simple and practical process for the oxidation of baryta is that proposed by Liebig, which consists in exposing an intimate mixture of baryta and chlorate of potassa to a gradual heat. The mixture is introduced, little by little, into a crucible, heated to dull redness: as soon as the chlorate of potassa melts, the mass begins to glow. The melted mass is powdered and exhausted with water, which leaves behind an insoluble residue, containing a large amount of superoxide of barium. But in this product, also, the proportion of oxygen does not amount to more than half the requisite quantity, and must, therefore, be regarded as a sesqui-oxide of barium.

In order to obtain pure peroxide of barium, the crude product obtained by the above process is finely powdered, triturated in a mortar with water, in order to reduce it to a hydrate, then carefully mixed slowly with dilute hydrochloric acid till it gives an acid reaction, the solution filtered, and again made alkaline with baryta water. The addition of the latter causes a precipitation of the alumina and oxide of iron. The alkaline solution, which

immediately begins to decompose, is quickly strained through linen, and an excess of baryta water added to the clear filtrate. By this, the hydrated peroxide of barium is precipitated in shining plates, which are insoluble in water, and can be washed by decantation. In order to be certain that all the peroxide is precipitated, a small portion of the liquid may be filtered and tested with a dilute solution of the bichromate of potassa. (In case peroxide of barium is still present, the addition of this reagent causes a blue coloration of the perchromic acid.—Wittstein.)

The washed precipitate is to be collected on a filter, pressed between filtering paper, and dried under an air pump, by which all the water of crystallization can be removed. The dried peroxide then has the form of a white, fine powder, similar to magnesia, and the formula BaO_2; is anhydrous, is contaminated by a trace (at the greatest) of carbonate of baryta, and is entirely stable.—*Vierteljh. Ph.*, xiv. p. 80. G. J. S.

NOTES ON MATERIA MEDICA.

By Prof. Archer.

1. *Notes on a New Species of Gall from China, with references to other unusual Commercial Galls.*

Since the greatly increased demand for gallic acid, which has been caused by the requirements of photographic chemistry, much interest has been felt in obtaining galls from various parts of the world from which to procure that acid. One of the first new products of this class was the Chinese gall, described by Dr. Pereira in the "Pharmaceutical Journal," vol. iv. p. 384, 1844, under the name of Woo-pei-tsze. These have now become regular articles of commerce, and so also has a similar one obtained in Japan, rather smaller, but apparently produced on the same tree, or a closely-allied species. Mr. Daniel Hanbury, who has carefully examined the Chinese galls, is of opinion that they are produced on *Rhus semi-alata*, and Mr. Doubleday, the entomologist, has shown that they are caused by an aphis, and not by a cynips, as in the case of most other galls with which we are acquainted.

Next came a small gall from India, called by its Indian name Mahee; this is yielded by two species of Tamarisk, (*Tamarix indica* and *T. furas*;) they are very rich in gallic acid, but are not procurable in very large quantities. The shrub, however, grows in Algiers, and there it appears to yield the galls more abundantly, as very considerable quantities are exported to France under their Moorish name Takaout. There is a curious gall, shaped somewhat like an ox horn, and about two inches or two and a half inches in length, which has a commercial value in India but has not yet found its way into our markets, it is called Kakarasinghee or Kakrasingee, and is produced on *Rhus Kakrasinghee*, (Royle;) they are, to a small extent, used by the Indian tanners, and have also a place in the Materia Medica of India; possibly, ere long, they may become articles of import into this country.

The gall most extensively used in Southern Germany is the curious Knoppern, produced by the puncture of a species of *Cynips* on an oak-tree,—*Quercus Cerris*. These have been imported occasionally, but are very inferior in quality to the common Turkish galls. In Italy, France, Turkey, and India the galls formed on several species of *Pistachio*, as *Pistacia vera*, *P. lentiscus*, etc., are used, and those from *P. lentiscus* are largely used for tanning in Turkey and Italy. Their value is not known in this country.

The latest novelty is a very curious gall which I have just received as an import from Shanghae; it bears strong resemblances to the Chinese and Japanese galls, but has not their peculiar branched appearance; on the contrary, it has mostly the form of a radish-pod, and, although some are slightly tomentose, as in the case of the other two, yet most of them are smooth; here and there we find amongst them some which have a tendency to the branched form; indeed, these galls seem to be intermediate in their general characteristics between the Kakarasinghee and the Woo-pei-tsze. They were lately imported into Liverpool, and doubtless will soon become common.

2. *Note on a New Article of Commerce, called Cape Saffron.*

This remarkable product, which strikingly resembles saffron,

in all but its color, is the dried flower of a very small plant, extremely common in some parts of the Cape of Good Hope, taking there the place of our common Toadflax,—*Linaria vulgaris*,—and belonging to the same Natural Order,—*Scrophulariaceæ*. It yields a color like that of saffron, and, what is very remarkable, it yields it as readily when mixed even with cold water; moreover, its odor is that of good saffron, and equally strong; two importations have taken place, the first about five years since, which was only a small sample, the latter about 70 lbs. weight; the former shared the fate of thousands of valuable products, it was buried in a drug-broker's drawer; the latter is in the hands of an intelligent merchant, Mr. David Bain, 50 Stanhope Street, Hampstead Road, London, who is fully alive to the value of bringing forward the economic products of the Cape. Dr. Papé since called attention to the uses of this plant, and the following quotation is from his "Floræ Capensis Medicæ Prodromus:"

"This bush deserves notice as a drug, and in all probability will, ere long, become an article of colonial export. It grows abundantly in some parts of the eastern districts, whence it has found its way into the dispensary. The flowers, which are called *Geele bloemetjee*, closely resemble saffron in taste and smell; they possess similar medical properties, and as an antispasmodic anodyne and stimulant, ought to rank with the *Crocus sativus*. Here, they have as yet been only used with success in the convulsions of children, but they deserve a more general trial. On account of the fine orange color which they impart, they are in daily request among the Mahomedans, who use them for the purpose of dyeing their handkerchiefs. This drug has been observed to be sometimes adulterated by the admixture of other plants of the same genus, which are less efficacious."

3. *Note on a New Product, called Cubebs, from South Africa.*

This material has been sent from Cape Coast Castle, under the name of African Cubebs. It has, however, no relationship to *Cubeba officinalis*, or any other pepper, but belongs to the Natural Order *Xanthoxylaceæ*, which is celebrated for the agreeable pungency of the fruits of many of its species, especially in

the genera *Toddalia* and *Vepris*, to one of which it undoubtedly belongs. I believe it is the fruit of *V. lanceolata*, (A. Jussieu,) the *Toddalia lanceolata*, (Lamk.;) this plant is pretty widely diffused, for it is found in the Island Mauritius, and is also common in the woody districts of various parts of the Cape of Good Hope. There is some slight resemblance to cubebs in this drug, but the slightest examination shows that it has no affinity with the peppers; its dry, dehiscent capsule, with the hard, bluish-black, shining, kidney-shaped seeds, and the membranous remains of the abortive cells, are distinctive characters which are quite sufficient to prevent any mistake. The properties are simply aromatic and stimulant, without any approach to the special properties which cubebs exercise upon the urinary organs. —*London Pharm. Journ.*

THE BRITISH PHARMACEUTICAL CONFERENCE AND THE AMERICAN PHARMACEUTICAL ASSOCIATION.

At the first sitting of the Conference at Bath, September 14, the President stated that he had received a communication from the Secretary of the American Pharmaceutical Association, informing him that an address of salutation and gratulation had been agreed upon, an engrossed copy of which had been forwarded to the present meeting. The President further explained that, owing to some accident, the said engrossed copy had not come to hand, but recommended that the extract from the volume of Proceedings, relating to the resolution, should be accepted in its place, which was immediately agreed to, and the Secretaries were ordered to draw up the draft of a reply, to be submitted for the approval of a future sitting.

At the final sitting of the conference, on September 19th, it was determined that the following resolution should be forwarded to the American Pharmaceutical Association, in reply to its address:—

Resolved:—That the members of the British Pharmaceutical Conference have received with much satisfaction the friendly greetings of their brethren of the American Pharmaceutical Association. They appreciate these expressions of goodwill the more highly, from their being spontaneously offered at so

early a stage in the existence of their own Society, and they see, in this circumstance, evidence that their American brethren are watchful observers of all endeavors for the advancement of pharmacy wherever made. The members of this Conference trust that such an example will not be without its influence in this country, and desire to record their feeling that the scientific labors of American pharmaceutists are worthy of being more extensively known in Great Britain than has been the case hitherto.

"This conference heartily reciprocates the expression of feelings of interest and goodwill towards the American Pharmaceutical Association, and will gladly embrace all opportunities for communication with its members, several of whom are honorably known in England through their scientific researches."
—*London Pharm. Jour.*, 1864.

THE PRESERVATION OF LEECHES.

To the Editor of the Pharmaceutical Journal:

SIR,—The constant loss sustained by retail dealers in leeches, especially by living in small towns where the demand is uncertain, has been a subject of discussion for many years.

Various vessels have been constructed, and many contrivances proposed to avoid loss, but I do not know of one which has answered perfectly.

The aquarium is perhaps the prettiest and most scientific, but there are difficulties connected with its use.

For nearly twelve months I have adopted a very simple, but very effectual remedy for the preservation of these useful creatures in a healthy condition, and securing me against loss.

I use an ordinary ornamental leech-jar, change the water daily, keep the jar clean by means of a sponge kept for the purpose; three-parts fill the jar with good spring water, and throw in ten, twenty, or thirty grains of the oxide of manganese, washed and levigated for dispensing purposes.

I consider about thirty grains is enough for 100 leeches, and renewed daily.

I now never see an unhealthy leech in my stock. I was led to adopt this plan by witnessing the beneficial effects of manganese administered to patients. If you think the above worth

publication in your journal, I hope many chemists will profit by my experience, and I shall be glad to hear that the same experiment, tried by others, yields results as satisfactory.

I remain yours truly, C. F. BEVAN.

Harwich, February 14, 1864.

—*London Pharm. Journal.*

EXPERIMENTS ON THE ACTION OF THE AIR ON VEGETABLE FATTY OILS.

BY M. S. CLOEZ.

It may be asked under what form the carbon and hydrogen are eliminated in the course of the oxidation of oils. I agree with Saussure, that a portion of the carbon passes to the state of carbonic acid, but I have, moreover, ascertained that the amount of carbonic acid produced does not nearly represent the whole of the carbon which has disappeared.

In the same way with hydrogen, part is disengaged as water, but it is also eliminated under some other form.

These facts are easily explained by the production of a carbonised volatile compound, the pungent odor of which greatly resembles that of acrolein; this is a substance which browns the sheets of unsized paper, serving to recover the oils exposed to the air.

Some old books are colored in the same way, and I believe that this coloration is the result of the slow oxidation of the oil used in the printing ink, and the formation of a product possessing a stifling odor, similar to that which I have recognized in air which has been for about ten days in contact with a siccative oil.—*Lond. Chem. News, March* 24, 1865.

ALCOHOL AS A TEST FOR CROTON OIL.

Mr. R. Warrington, F. R. S., has published in the *Pharmaceutical Journal* some experiments on the British Pharmacopœia test for croton oil, which have led him to conclude that the use of alcohol as a test for the purity of the oil is of no value. His own opinion, he states, is that freshly expressed oil, or rather *oil* expressed from *fresh* seeds, either abroad or in this country, does not dissolve in alcohol sp. gr. .794—.796 to a

greater extent than 20 per cent. at 50°; but that if croton oil has undergone a chemical change, such as resinification or oxidation by time and exposure to air, or has been expressed from seeds which have become changed in the same manner, then the oil is freely dissolved by the alcohol. It follows that "a test which is open to many weighty objections, both from the influence of small fluctuations of temperature, and for indicating the purity of material liable to such marked differences from the effects of such natural, and in some cases inevitable, chemical changes, is perfectly useless as a reliable indication of purity."—*Chem. News, Feb.* 3, 1865.

COCHINEAL COLORING.

For the following formula we are indebted to Dr. George Dickson, of Edinburgh:—

"Cochineal coloring may be prepared without admixture of carbonate of potash, alum, etc., as follows:—

Take of—

Cochineal in powder, 1 oz.
Spirit of wine, 2 oz.
Water, 6 oz.
Liq. Ammon. Fort., q. s. (about ♏ viij.

"Mix the spirit and water, and in three ounces of the mixture, heated to near the boiling-point in a flask, infuse the cochineal for fifteen minutes. Pour the infusion into another vessel, and repeat the process with three ounces more of the mixed spirit and water; and a third time, with the remaining two ounces. Let the liquid stand till cold, when some fatty matter will rise to the surface; filter, adding spirit and water, up to eight fluid ounces. Lastly, add sufficient Liq. Ammon. Fort. (about ♏ i. to ʒi). to change the infusion to the desired tint.

"The objections to the use of carbonate of potash, alum, etc., are:—1st, The coloring-matter is thrown down as a lake, and after some time, forms a layer at the bottom of the containing vessel, requiring the addition of ammonia to redissolve and keep it in solution; and 2d, it does not keep well. On the other hand, the advantages of this preparation are:—1st, the coloring-matter remains in solution, and 2d, it keeps well, and has no unpleasant odor."—*Lond. Pharm. Journal.*

ON THE BOTANICAL ORIGIN OF SAVANILLA RHATANY.

By Daniel Hanbury, F. L. S.

It is a fact well known to druggists that the Rhatany Root which formerly found its way into European commerce from Peru, has to a great extent been superseded by another and very excellent form of the drug exported from New Granada, and commonly known in the market as *Savanilla Rhatany*. But from what plant this latter drug is derived, or in what part of the vast territory of New Granada it is produced, are points upon which I believe that no definite information has yet been published.

Having endeavored during some years past to elucidate these questions, but without much success, I gladly took occasion of the recent mission to New Granada, of Mr. John Weir, collector to the Royal Horticultural Society, to suggest that enquiries should be made at Santa Marta regarding *Savanilla Rhatany*, and that Mr. Weir should, if possible, visit the locality where the root is collected. The Royal Horticultural Society having accorded permission to Mr. Weir to devote some attention to this object, he soon succeeded in ascertaining that the rhatany in question is obtained from the vicinity of Jiron, a small town lying to the west of Pamplona and about midway between it and the river Magdalena. To this place, Mr. Weir directed his course, arriving there in the latter part of January, 1864, when he thus wrote;

"*Jan.* 31*st.* Enquiring to-day where the Rhatany plant was to be found, Mr. L. informs me that in various places among the naked hills and savannahs around, the plant grows in plenty, but none nearer than a short day's journey from Bucaramanga. He told me, also, that he used to export large quantities of the drug, but that he had lost $2000 by the last lot he sent away, and had not sent any for the last twelve months. I saw, however, a quantity of the root in another house, packed in bags ready to be sent away.

* * * * * * *

"*Feb.* 1*st.* Started this morning for the valley of Jiron. A few leagues above the village of that name the Rhatany was said to be common, much of the root being there dug for export.

The road lay upon the bottom of the valley, following the course of the stream the whole way. Two leagues above the village the plant begins to be frequent, and a league further on there are large tracts covered with it. The soil it grows in is arid, hard, and gravelly in the extreme, so much so that in taking up the root the instrument used is a strong iron crowbar, a little flattened at the lower end; from the same cause the roots are generally broken into small pieces in the process, it being rather brittle when fresh. The general height of the plant is about four feet; but in some places it seems to grow stronger than in others, and I saw considerable patches of the shrub quite six feet in height.

"I gathered many specimens of the plant in flower and fruit, and also a small specimen of the root attached to the stem and branches."

The specimens here alluded to, consist of the pressed and dried plant bearing flowers and fruits, and stems with roots attached, the last being in every respect identical with the Savanilla Rhatany of commerce. A slight examination sufficed to prove the plant a species of *Krameria*, and the next point of interest was the determination of the species. Turning to the newly published *Prodromus Floræ Novo-Granatensis* of MM. Triana and Planchon, one finds three species of *Krameria* there enumerated, namely *Kr. Ixina* L., *Kr. grandiflora* St. Hil. and *Kr. spartioides* Kl., to the first of which Mr. Weir's plant proved to be most nearly related. Unfortunately no specimen of *Kr. Ixina* now exists in the herbarium of Linnæus, but in that of the British Museum there are two, representing that form of the plant which has been figured by Hayne. From this type, the New Granada plant differs in having leaves which in the young and vigorous shoots have a spathulate rather than lanceolate outline, besides which they are somewhat more hirsute. In flowering shoots of less luxuriant growth, these differences are far less marked, and the plant in this state appears to vary but little from the true *Kr. Ixina*. The flowers and fruits do not present, so far as I have observed, any marked differences.

Upon showing Mr. Weir's plant to my friend Dr. Triana, he at once identified it as the *Kr. Ixina Prodromus Floræ Novo-*

Granatensis, distinguished in his MS. notes as var. *β. granatensis*. Considering the present state of our knowledge of the species of *Krameria*, Dr. Triana's determination of this plant as a variety of *Kr. Ixina* appears to me highly judicious, and far safer than the introduction of a new specific name, which the receipt of further specimens would probably show to be untenable. I therefore accept *Krameria Ixina* L. var. *β. granatensis* of Triana as the plant, the dried roots of which constitute the drug known as *Savanilla Rhatany*.

This form of *Kr. Ixina* has an extensive geographical range, for besides occurring in the locality already mentioned, it exists in Brazil, where it was collected in the Island of Itamaraca, near Pernambuco, by Gardner, who described it as "a shrub about three feet high with long spreading branches." Another specimen from the same botanist in the Hookerian Herbarium, is labelled "common on dry hills in the Sertão of the province of Ceará.—*London Pharm. Journal*, March 1, 1865.

ON THE SOLUBILITY OF CAMPHOR IN WATER.

By Geo. F. H. Markoe.

"What is the proportion of *camphor* present in the officinal 'Aqua Camphoræ?'"

To prepare camphor water, in accordance with the directions of the United States Pharmacopœia, we take of

Camphor, 120 grains.
Alcohol, 40 minims.
Carbonate of Magnesia, ½ a troyounce.
Distilled Water, 2 pints.

Rub the camphor first with alcohol, then with carbonate of magnesia, and lastly with the water gradually added, then filter through paper.

All the authorities, whose works are at my command, agree in saying that camphor is soluble in 1000 parts of cold water. Storer, in his "Dictionary of the Solubilities of Chemical Substances," states, "From an intimate mixture, *camphor* with carbonate of lime or carbonate of magnesia, water is said to take up three times as much *camphor* as when shaken with *camphor* alone." Storer makes no mention of the method em-

ployed to determine the amount of *camphor* taken up from its mixture with carbonate of magnesia, nor do the authors of the United States Dispensatory state how they prove the presence of "*fifty grains*" of camphor in each pint of officinal water.

The only hints, contained in the standard works, that suggest a method by which the quantity of camphor in the officinal water might be determined, are the statements that "*solution of potassa*," *sulphate of magnesia* and some other salts will separate *camphor* from its aqueous solution.

To test the truth of these assertions the following experiments were instituted:

1st exp. Two pints of camphor water were treated with solution of potassa, which threw down a bulky flocculent precipitate, which was collected on a small filter and dried between folds of bibulous paper, by which treatment it lost nearly all its bulk, leaving a very small quantity of a light-brown colored substance on the filter, which was insoluble in water and alcohol, but the greater part readily dissolved in dilute hydrochloric acid with effervescence.

2d exp. Sulphate of magnesia was added to two pints of camphor water as long as it caused a separation of camphor, and a few grains were obtained floating on the surface of the liquid.

3d exp. *Four ounces* of chloride of calcium were added to *two pints* of "camphor water," and the camphor which rose to the surface was collected on a filter. Two more ounces of the chloride were added to the filtrate without causing the separation of an additional quantity of camphor. The camphor on the filter was washed with camphor water, dried between folds of bibulous paper, dissolved in a very little chloroform, the solution evaporated spontaneously, and the camphor obtained weighed *six grains*.

4th exp. One pint of camphor water was shaken with stronger ether, and set aside to let the ether separate. When this was accomplished, it was carefully decanted from the water and then evaporated spontaneously, but without yielding camphor.

5th exp. One pint of camphor water was treated with chloroform with negative results.

From the above experiments we may conclude that neither of the reagents used possess the power to remove camphor from its aqueous solution more than to a very limited extent, while three—solution of potassa, ether and chloroform—failed entirely.

I then turned my efforts to getting out the undissolved portion of the *camphor* mixed with the carbonate of magnesia. After many experiments the following process was adopted as giving the most satisfactory results:

1st exp. Two pints of camphor water was carefully prepared, and the magma of carbonate of magnesia and camphor remaining on the filter was transferred to a small beaker, and treated with dilute sulphuric acid in very slight excess, thereby dissolving the magnesia as sulphate, while the camphor rose to the surface and was collected on a small filter, washed with camphor water, to remove adhering sulphate of magnesia, dried between folds of bibulous paper, by which means it was obtained in the shape of a dirty, gray cake, mixed with the impurities derived from the carbonate of magnesia and shreds from the filter. To obtain the camphor pure, the mixture was treated with chloroform, the solution thrown into a small funnel, the neck of which was stopped with a little cotton; and finally, the camphor obtained by the spontaneous evaporation of the cloroformic solution, was carefully weighed, and gave a yield of *fifty-five grains*.

2d exp. With like quantities and manipulation gave a yield of fifty-nine grains.

3d exp. do. do. fifty-four grains.

4th exp. do. do. fifty-six grains.

The average amount obtained by these experiments being fifty-six grains; deducting fifty-six (56) grains from the one hundred and twenty (120) grains of camphor used in each experiment, gives a difference of sixty-four (64) grains, which must represent the amount of camphor present in *two pints* of the officinal "Aqua Camphoræ," being of the proportion of *two grains* in each fluid-ounce of the finished preparation, or one part of camphor in two-hundred-and-forty (240) parts of water. Storer's statement that "water takes up three times as much camphor from its intimate mixture with carbonate of lime or magnesia than when shaken with camphor alone, (assuming it to

be a fact that, in the latter case, but one part of camphor is taken by 1000 parts of water,) will make the limit of solubility one part of camphor to three hundred and thirty-three and one-third parts of water (333⅓.) Perhaps the greater amount obtained in solution by following the directions of the U. S. Pharmacopœia, may be well explained by the preliminary trituration of the camphor with alcohol previous to its mixture with the carbonate of magnesia.—*Proceedings of the American Pharmaceutical Association*, 1865.

THE PHARMACEUTIST AS A MERCHANT.

By Frederick Stearns.

That which constitutes "commercial education" in relation to the pursuit of all usual forms of business, is capable of being applied to the Pharmaceutist, there being, however, special points relating to each, and those whatever they may be, it is presumed are the ones to be touched upon in any essay upon commercial education in relation to the successful pursuit of the Pharmaceutic art.

Taking it for granted that the noviciate has acquired during his minority a fair share of the "King's English," has even graduated at a school of Pharmacy during his apprenticeship, then the following remarks may be usefully applied:—

Commercial education, or the knowledge of those methods of conducting business by means of which pecuniary success and an honorable position in community are obtained, is of course the fruit of experience only in the vast majority of instances.

The social position of the Pharmaceutist, in our country at least, is fully equal to that of those following successfully other channels of trade. Its pursuit implies a cultivated mind and scientific tastes, and as we acknowledge no aristocracy but that of mind, the necessary qualification of professional skill in our art ennobles it.

It is of primary importance that the beginner should enter upon the pursuit of Pharmacy enthusiastic, earnest, and with unbounded ambition to succeed and excel; to be in love with it, and with a firm determination to let no trivial disappointments turn him from his course.

I believe it true that the discouragements are greater to the beginner in Pharmacy as a business, than in many other pursuits, because the demand for the products of our skill is limited in comparison with that for most great staples of trade which busy the business talents of the mass of our fellow-men; moreover, a community take to a new Pharmaceutist shyly and slowly, confiding in him only as they come to know him.

Choose, then, Pharmacy as a business in the profound conviction that you were born for it, and not take it up on trial to be thrown aside for some other. Are you hopeful? So much the happier will you be, for anticipation of success is about equal to its reality.

Don't try and stand alone until you have reaped the benefit of an aprenticeship with some experienced and successful preceptor, during which you have enriched your mind by reading, study and schooling in Pharmacy, and acquired those business ways and habits which have led him, whose example you study, to success. This preliminary education is of such vital importance that the want of it can never be compensated by the slowly accumulated experience of an active life of years. I know of many young men who, after a stay of one or two years in a subordinate position in a drug store, have started in business full fledged, in their own belief, as capable and experienced Pharmaceutists; such gravitate naturally to the position in which they properly belong among merchants, remain incapable and become obscure.

We all know this *hasty* tendency is peculiar to American youth; ambitious to reach the goal of future hopes, it leaves the formation of correct business habits to the chance of coming years; this it is that crowds our cities and towns with so many ignorant druggists—men who pick up the business of Pharmacy as they would that of selling Yankee notions, live and succeed in a small way, or fail ingloriously; in either event, blissfully ignorant of the capabilities of the art in whose borders they have to tread.

After a varied experience of twenty years in Pharmacy, I am possessed of the strongest conviction that a rigid adherence to principles of integrity, to honor and to truth, in conducting our business, is most surely conducive to its success; therefore,

business *policy* should dictate such conduct aside from moral conviction.

We all know a thousand *tricks* in trade, the prevarication, the exaggeration and other nameless ways of making things appear as they are not, and which so often overshoot the mark, till it is a common thing for the community to allow an ample margin on almost every thing that comes from a drug store, between semblance and reality, utterance and truth. This is not as it should be; for truthfulness, in all our ways, is the best business policy, as it is most satisfactory to the conscience.

Now, supposing our beginner to be possessed with a fair education, moral, ethical and scientific, but no experience as a business man, what points are there to be observed in trade that will be most likely to lead to pecuniary success?

There are many, of small importance singly, but in the aggregate help to swell the tide that leads on to fortune.

The Pharmaceutist as a merchant *must be* industrious; the details of the business are so numerous as to tax, almost to its utmost, his endurance and patience.

When the aggregate yearly business is any considerable sum from the retail sales of medicines and accessories, the details to accomplish that require a vast number of steps and much labor of hand and brain; so it becomes a fixed fact that there is no moment, in a well organized business, that there is not something to do; there *are* no leisure hours.

This industry must be *personal*, too, in a proprietor, to be seconded by his assistants; this industry also implies a personal eye to all the details of a business, consequently there can be little leisure for outside occupations; better do one business well than trust to the chances of success in two or three at once, none properly conducted.

What is termed business *tact*, as it may be applied to our art, consists in knowing, as it were intuitively, how to win friends and draw customers around you.

It is shown into a proper selection of a business stand. Had I the choice between a good stand with little means to expend in fixtures, and an indifferent one with rich fixtures, I should choose the former, trusting to the future to make up the last want.

It is shown in the fittings of a store; rich without extravagance, or plain with neatness, either may be elegant. Convenience and appliances which favor the *rapid* dispatch of business, should not be overlooked as a saving of help and labor, and consequently a means of profit.

Tact is particularly shown in a courteous bearing towards customers, implying an appreciative sense of their patronage, with a self-possession and manly self-respect that is above fawning or flattering. Here it is that an intelligent understanding, or knowledge of the goods in which we deal—their history, their merits, their qualities, their peculiarities—is of such great assistance in our business in making sales. If you possess the ability (and you should possess the will) to explain to the customer, with curiosity excited, that which he seeks to know, or to impart that which you have led him to desire to know, and you do it in a self-confident yet truthful way, it is always a great point gained; that customer will always respect your intelligence; his opinions in all that relate to the art will be moulded by your own, and he will be sure to be your regular patron.

I believe in stating the merits of an article decidedly and truthfully; good goods tell no after-tales of deceit; poor ones, well puffed, most surely will.

Business tact is shown in treating your clerks as if they were friends, and so making them such. Kind words and even temper are consistent with a sufficiently rigid discipline; remember, that the example by word and deed of a proprietor will produce lasting effects on the impressible characters of your young apprentices, bearing fruit in future habits and business ways.

Business tact is shown again in keeping pace with the age in which you live—to be ready with all the innovations, novelties and sensations in the medical world—experimentally, of course, at first; and, while you do not endorse such necessarily by your own approval, you should be ready to supply them.

It is shown in the careful selection of the stock of goods, particularly where means are limited, watching the demand so as to apportion it correctly, so that no overplus of some

items may lesson your ability to keep a full assortment of goods.

It is shown in guiding the market yourself, not letting it guide you; strive to lead the *tastes* of your customers towards those kinds or qualities of goods which you know to be best for them, better than they themselves do. I hold this to be a duty which none of us should be indifferent to.

Business tact is shown in so individualizing your business that everywhere possible the articles sold by you should represent *you*, not some one else; make everything yourself that it is at all practicable for you to make, and if your skill is such that whatever you make represents the best of like articles, then each item of such sold is a standing advertisement for you to win additional trade. I am a firm advocate of the practice of each Pharmacy being a producing one; it is no credit to a man, who has been well educated in this art, to be contented to live long and sell only the products of others' industry, when he might better make his own, increasing his business and reaping the additional portion of profit thereby.

Business tact so displays goods as to make the most of them, so in a measure to help them sell themselves; therein neatness and taste go hand in hand with industry.

While business tact will lead the merchant, desiring success, to deal in all the articles of his line that the public calls for, there are in ours very many things that, which to do, is more or less to compromise with the right and wink at the wrong;—the alcoholic stimulants under the guise of medicated bitters—the regulating remedies, so advertised as to furnish a ready means for criminal purposes—add to these almost the whole list of the so-called patent medicines; all these the intelligent Pharmaceutist knows are pernicious in their effects upon the public health, and yet how feeble are his efforts to retard their sale, how weak his protest against their use. If you do deal in such, be independent enough to make the sales of them depend upon the natural law of *demand*, and *not* on your efforts; do not, above all things, ever endorse them with breath of praise.

About advertising, that is also a legitimate means of making yourself known, but how best to do it to reap the largest re-

turns for the smallest proportionate outlay is an art in itself, and one that each must learn by himself.

After all said about business tact, business success will be dependent upon keeping and selling those qualities of goods, in every department of your trade, that are intrinsically good, and he who takes, in that respect, the highest stand will reap the greatest reward.

The greatest *reward* lies not only in money gains, but in reaching that honorable position in community wherein you are looked upon as a public benefactor, in seeking honest profits and not being a Shylock. It gladdens me to remember professional friends who are poor, perhaps, in pocket, but rich in possessing the respect and affection of their neighbors, while my mind's eye rests on an occasional one who is poor in everything that can make a man *poor*.

The economical administration of business affairs will commend itself to all who mean to win success; and, while a commendable share of enterprise is to be advised, a proper mixture of caution is quite as valuable.

Men of scientific tastes are not apt to be good financiers; such tastes render them careless of money; they rarely understand economy in business, and in business they trust their finances to others not vitally interested. The Pharmaceutist should know at all times how he stands in credit and purse; "cutting your coat according to your cloth," and the host of similar commercial maxims, commend themselves forcibly to his attention.

Great is the field for the inventive faculties to play in pursuit of Pharmacy—devising improvements in formulæ, shortening methods, improving apparatus, introducing new, unique and original designs in labels, bottles and various similar things. Don't be a mere copyist of others, but add something, during a lifetime, to the sum total of taste and improvement.

It is surprising how the little elegancies, and nice nothings, aid the business of the prosperous and enterprising Pharmaceutist.

Professional men are not given to business-promptness; don't let the title of *professional*, which is attached to our art, lead to

any such careless habit as a want of promptness in fulfilling any and every promise to do or promise to pay.

So varying and peculiarly are the auspices under which each young man enters business, that it is not likely that the foregoing covers all the ground designed for a reply to the query I accepted; these several points, however, may, if acted upon, be conducive to a proper estimate in the minds of some of the right paths to follow in acquiring a commercial education. —*Proceedings of the American Pharmaceutical Association*, 1865.

Detroit, Mich. Sept., 1864.

ON ÉSÉRINE, THE ALKALOID OF THE CALABAR BEAN.

By MM. A. Vee & M. Leven.

The authors begin with pointing out that the *physostigmine* of Jobst and Hesse only possesses some of the characters of an immediate principle, and is, in fact, a mixture of several bodies, of which the most considerable is a crystallisable body which they call ésérine. This is obtained in the following way, which, it is said, is a modification of the process of Stas for separating alkaloids in cases of poisoning.

Calabar beans reduced to a fine powder are exhausted by cold alcohol. The alcohol is carefully distilled from the tincture, and the extract is treated with a strong solution of tartaric acid. After some time the mixture is diluted with water, filtered and then supersaturated with bicarbonate of potash. The whole is now shaken with ether, and the ethereal solution separated gives on evaporation the alkaloid contaminated with foreign matters. The extract is dried over sulphuric acid, and then re-dissolved in pure anhydrous ether, from which solution the alkaloid is obtained almost pure. Repeated solution in alcohol or ether remove all the impurities, but a little red coloring matter which obstinately adheres.

Esérine* is a crystallisable solid of a faintly bitter taste, which is not immediately perceived. It is freely soluble in ether,

[*This new name is uncalled for; we hope the original name, from the genus of the plant, will be retained by chemists.—Ed. Am. Jour. Phar.]

alcohol, and chloroform, and but slightly soluble in water. It crystallises in thin rhombic plates, which are colored by polarised light. The aqueous solution has an alkaline re-action. The alkaloid is soluble in acids; the solution gives all the ordinary general tests for alkaloids. The solution acts powerfully upon the pupil.—*Lond. Chem. News*, Feb. 17, 1865.

ANALYSIS OF KOLA NUTS,

By J. Attfield.

Dr. Attfield communicated the results of an analysis of the kola nut. He sought first for theine. A decoction was precipitated by basic acetate of lead, excess of lead removed by sulphuretted hydrogen, and the clear solution left evaporated to dryness. The residue was digested in hot alcohol, and the alcoholic solution evaporated to small bulk. This, when cold, solidified to a mass of crystals, which were found to possess all the characters of theine. The amount of this body present in the kola nut is 2 per cent. No other acid, basic, or neutral body was found. The fresh nuts have a bitter taste, which the dried do not possess; and the former probably contain a bitter principle to which some of their activity must be ascribed. Starch is present to the extent of 42·5 per cent; gum, sugar, and an albumenoid substance (probably legumin) are also found, and likewise a small amount of an oil possessing a smell resembling that of myrrh, and a burning, persistent taste. Tannin is entirely wanting in the nuts. The composition of the nuts is shown in the following table:—

	In 100 parts.
Water, . . .	13·65
Cell wall and coloring matter, .	20·00
Starch, . . .	41·50
Volatile oil and fixed fat .	1·52
Albumenoid substance, . .	6·33
Gum, sugar, and other organic matter,	10·67
Ash, ...	3·20
Theine, . . .	2·13

Dry kola is thus seen to somewhat resemble coffee, but differs in containing no tannin, but little fat, and much starch. When

made into a beverage, it is thick and mucilaginous; but is tasteless, odorless, and flavorless, and is not improved by roasting.—*Lond. Chem. News*, Feb. 17, 1865.

ON THE APPLICATION OF DIALYSIS IN DETERMINING THE NATURE OF THE CRYSTALLINE CONSTITUENTS OF PLANTS.

By J. Attfield, Ph. D., F. C. S.

Director of the Laboratories of the Pharmaceutical Society of Great Britain.

(Read at the Bath Meeting of the British Pharmaceutical Conference, Sept., 1864.

Some two years ago ("Pharmaceutical Journal" for March, 1862) I published the results of an examination of the saline efflorescences which are occasionally found on medicinal vegetable extracts. These crystalline out-growths were found to be chloride of potassium or nitrate of potash. The former salt had often been observed, but the latter had not been noticed although it is of common occurrence. From that examination, it seemed that nitrate of potash was a more frequent constituent of plants than had been suspected, and I then proposed the application of a method whereby the presence of it and of similar salts could be detected in the fresh plant. The suggestion was to dialyse expressed juices, concentrated decoctions or infusions of plants, and then to evaporate the diffusate to a small bulk, when it was to be expected that the nitrate of potash, or any other crystalline salt, would separate out in a solid and recognizable form.

Since that time I have submitted a few plant-juices, the first that came to hand, to the process, and have obtained results which justify me in recommending the method as one likely to be of great service in the study of vegetable physiology. Crystalline salts can be thus obtained which would inevitably be destroyed in burning a plant for its ash. The following are the details of the experiments:—

Solanum tuberosum.—A few pounds of potato tops were collected and at once crushed and pressed and the juice dialysed for twenty-four hours. On evaporating the diffusate and cooling, small prismatic crystals separated, having all the physical and chemical characteristics of nitrate of potash. Under the micro-

scope they were found to be six-sided and to twist a ray of plane polarized light, were not volatile, gave a violet tint to flame, and deflagrated on charcoal; the aqueous solution gave a yellow crystalline precipitate with bichloride of platinum, no odor on heating with caustic alkali, a black color with sulphate of iron and sulphuric acid, and yielded ammonia on heating with potash, zinc and iron. It was deemed desirable to apply all these tests in this and similar examinations, as a pound of vegetables seldom yielded more than a few grains of crystals, a quantity sometimes too small to purify crystallisation, and always too small to admit of the production of strongly marked analytical reactions. In the case of potato, however, I went to the trouble of operating upon thirty or forty pounds of the tops and thus obtained about the same number of grains of nitrate of potash, and the extra labor was rewarded, for the mother-liquor of the nitre, after standing aside two or three days, yielded a small crop of beautiful little crystals, of which I can at present say but little more than that they were not nitrate of potash. They were perfect little hexagons, not much longer than broad, with flat heads; I suspect them to be a magnesium salt. Besides these constituents, the juice of potato yielded cubes, hollow pyramids, and prisms of chloride of potassium, much ammonia and sugar, even immediately after expression, and other matters, the nature of which was not ascertained.

Atropa Belladonna.—The leaves and soft parts of the Deadly Nightshade also yielded nitrate of potash by the above process. But in addition some acicular crystals, single and in tufts, were obtained. These were carefully separated from the nitre crystals and were recrystallized. They were then found to be square prisms, either deliquescent nor efflorescent, and containing magnesium as the sole inorganic constituent. The nature of the organic matter associated with the magnesium could not be ascertained, apparently it was not any of the ordinary organic acids. The juice of Belladonna also contains ammonia, a matter which reduced copper salts as sugar does, and other bodies not examined.

Pisum sativum.—Several quarts of peas, in the shell, were similarly treated. The product was a thick syrup of light-brown

color, yielding no crystals even after the lapse of several weeks. The ash of a portion of it gave a pure potassium tint to flame, and its solution a slight chlorine reaction. Ammonia was also evolved on heating the diffusate with potash, but no nitric acid could be detected. Apparently, therefore, the fruit of the pea contains no nitrate of potash, and only a minute quantity of any inorganic crystalline salt. The chief organic crystalloid is obviously sugar.

Lactuca sativa.—Half-a-dozen large garden-lettuces were next submitted to the process. Here, again, the concentrated diffusate yielded nitrate of potash. The crystals, were, however, mixed with many perfect tetrahedra, but in quantity insufficient to admit of chemical analysis. The mother-liquor contained sugar and ammonia.

Cucumis sativus.—Several cucumbers were then operated on. They furnished a diffusate, of which the chief constituent was sulphate of lime, but it also gave reactions indicating sugar, and the juice, immediately after expression and again after dialysis, yielded ammonia on warming with dilute solution of potash.

Brassica oleracea.—The juice of three or four cabbages, treated in like manner, also gave a diffusate, from which much sulphate of lime separated on evaporation. It also yielded ammonia when heated with fixed alkali, but besides sulphate of lime no crystals were obtained from it.

Datura Stramonium.—This plant, the Bitter Thorn-apple, I found to contain so much nitrate of potash that a dried portion quite deflagrated on being burned in a muffle.

From these few experiments it is, I think, obvious that this application of Graham's beautiful process of dialysis promises to be of great service in investigating the nature of the crystalline constituents of plants. It may assist you in extending our knowledge of the natural state of combination of the alkaloids and organic acids; it may demonstrate the presence of salts previously unknown, and may show that salts, hitherto only occasionally met with, are of common occurrence. Moreover, by showing the presence or absence or variation in amount of a given crystalline constituent, it will help us in ascertaining the influence which variations in climate and soil have upon vegetables, will doubtless aid in determining more ex-

actly the office of the various parts of plants, and, lastly, may throw light on the changes which go on at different periods of the life of a plant.—*London Pharm. Journal.*

ON TOBACCO.

By Ferdinand F. Mayer, of New York.

Query 11th.—Is nicotina the active principle in carefully dried green tobacco leaves? Do the seeds of tobacco contain the same alkaloid? and if so, does the proportion of nicotina in commercial tobacco justify the belief of Liebig (*Agricultural Chemistry*, Amer. ed., p. 184,) that it is an artificial product?

Numerous as have been the essays published both on the chemical and the therapeutical relations of *Nicotiana Tabacum* and its narcotic principle, they refer for the greater part to the leaf of the usual brown color and well-known irritating ammoniacal odor, which is the form officinal in all Pharmacopœias; for, though universally cultivated, the plant is never prepared specially for application in medicine like other narcotics, partly because of the commercial article being still more readily obtainable, but, in yet greater measure, because the fresh and the dried green leaves have very generally been considered, if not devoid, to be at least of very feeble developed medicinal virtues. Only those of another species, *N. rustica*, are occasionally used fresh as an external application, and are, or were formerly, officinal in some European Pharmacopœias.

There is so striking a difference in many of the outer properties of the officinal plant, in the green and the cured condition, as to offer in itself some grounds, for what was formerly universally and is even now very generally believed, that the volatile alkaloid on which the activity of brown tobacco is supposed to depend was not present as such in the living plant, but that it is a posthumous product formed entirely or partly during that incomplete fermentation which it undergoes in the hands of the cultivator, the "*bulking*" of tobacco. For, the fresh plant possesses none of the peculiar heavy odor of the other narcotics. Nor is the dried leaf much more pungent than a common herb. Its infusion, like the fresh juice, has an acid reaction, and contains no ammonia. Its color is pale green,

with here and there some brownish patches; but the taste is decidedly acrid, and certainly only differs from that of the commercial article by the absence of free ammonia. It also contains a large proportion of nicotina in combination.

This had been pointed out as early as 1809 by Vauquelin, in the report made by him with Robiquet and U. S. Consul Warden. It was again shown to be present by Posselt and Reimann, in 1831, in plants of several species grown near Heidelberg, and again in 1836 by Henry and Boutron-Charlard; and in 1831 A. Buchner, sr., prepared some nicotina from the seeds. Lastly, our excellent Procter, in the answer to very nearly the same questions as those at the head of this paper, read before the meeting of 1858, proved without doubt the presence of the alkaloid at least in the fresh leaves; and the authority on whose credit the origin by fermentation had been maintained, as quoted in the query, corrected the statement made there as early as 1844, upon the occasion of a paper on Tobacco-smoke by A. Melsens, in a note to which (*Annalen der Chemie und Pharmacie, vol.* 49, *p.* 359) Liebig mentions that "at the Giessen Laboratory not inconsiderable quantities of the alkaloid had been obtained from the fresh plant."

With such evidence the presence of nicotina in the plant, through its various stages, may be accepted as satisfactorily proved. Yet Mr. Procter suggested that the matter, especially in regard to the seed, be again made the subject of research, and since this investigation has been undertaken by me, fresh interest has been imparted to it by the publication of a paper on the same subject in the *Vierteljahrsschrift fur Pharmacie* of April last. The author of this essay found a volatile principle, which on the strength of its odor he assumes to be trimethylina (pseudo-propylamin,) said to have originated from a fermentable substance contained in the seed, and he believes that Buchner mistook a mixture of ammonia and trimethylina for nicotina.

In order to avoid, if possible, errors arising from reliance upon such deceptive characteristics as odor, and because in the examination of the plant at least two bases are met with possessing a pungent and somewhat similar odor, I have made use, besides the usual distinction resting on the percentages of pla-

tinum in the double salts of the volatile bases, of the following table founded on previous and new observations of Nessler, Winckler, Procter, myself and others.

Principal Reactions of the Medicinal Volatile Bases.

(*w.* = watery solution, *s.* = salts, or acid solutions.)

REAGENTS ADDED TO	AMMONIA.	TRIMETHYLINA.	ANILINA.	NICOTINA.	CONIA.	LOBELINA.
Iodine in Iodide of Potassium	*w.* Decolorised. *s.* No change.	*w.* & *s.* Orange colored precipitate.	Brown solution, afterwards a precipitate, or none.	*w.* and *s.* brownish red precipitate.	*w.* & *s.* Pale brownish-red precipitate.	*w.* and *s.* Brownish-red precipitate.
Tannic Acid	*w.* No Precipitate. *s.* Precipitate of tannin if concentrated.	Neutral and alkaline solutions; white, curdy precipitate.	No precipitate.	Whitish precipitate, soluble in acids.	White precipitate, soluble in tannic and other acids.	White precipitate, soluble in tannin and ammonia.
Chloride of Mercury	*w.* White precipitate.	*w.* White precipitate.	No precipitate.	*w.* White precipitate.	*w.* White precipitate.	*w.* No precipitate.
Iodohydrargyrate of Potassium	*s.* No precipitate; with caustic KO orange to brown precipitate. *w.* White to yellow precipitate, soluble in excess.	*s.* A loose mass of pale yellow crystals, very soluble in excess of iodide of potassium & caustic KO; decomposed by shaking with water. *w.* Precipitate which re-dissolves in excess.	*w.* Solution; white precipitate, soluble in excess and in KI, reproduced by KO, but re-dissolved by excess of the same.	*w.* and *s.* Yellowish precipitate, somewhat soluble in excess of reagent, and readily soluble in caustic KO.	*w.* & *s.* Same as nicotina.	*w.* and *s.* Pale yellow precipitate, little soluble in excess of reagent or of caustic KO.
*Acetate of Lead.**	.....	.....	.....	.....	.....	.....
Nitrate of Silver	*w.* Brownish-black.	*w.* Grayish, soluble in nitric acid.	No precipitate.	*w.* At first no precipitate, but a turning brownish-black one on heating.	*w.* White precipitate, turning brownish, soluble in ammonia, at first also in nitric acid.	*w.* White precipitate, soluble in ammonia and nitric acid.
Chloride of Gold	*w.* Reddish-yellow precipitate.	*w.* Grayish-yellow, insoluble in hydrochloric acid.	*w.* No precipitate.	*w.* Yellowish, curdy, insoluble in HCl.	*w.* Whitish, insoluble in HCl.	*w.* Pale yellow, insoluble in HCl.
Chloride of Platinum	.....	.....	.....	.....	.....	.....
Density and Solubility	Very soluble; mixes with water.	Very soluble; mixes.	Scarcely soluble; floats.	Little soluble; sinks.	Little soluble; floats.	Little soluble; floats.

Course of Proceeding.—The volatile alkaline substance having been obtained in form of a concentrated solution in water, and

* In the watery solution, except of *aniline*, a white precipitate.

† Distinct precipitate only from *nicotina*, which dissolves on heating.

in part as solution in hydrochloric acid, a drop of a solution of iodide of potassium saturated with iodide of mercury is added to part of the acidulated solution. Either,

I. *It produces no precipitate.*—Absence of trimethylina, nicotina, lobelina, conia. To a portion of the unchanged solution add caustic potassa in slight excess, which causes a precipitate. It is

Whitish and pulverulent: *anilina.*

Reddish to brown and flocculent; *ammonia.*

II. *A precipitate is produced.*—Add excess of the solution of mercury.

1. The precipitate re-dissolves very readily: *trimethylina.*
2. The precipitate is scarcely soluble in excess of mercury, but readily, while fresh, in caustic potassa: *nicotina, conia.* Apply the specific tests.
3. The precipitate is scarcely soluble in either: *lobelina.*

NOTE.—*Ammonia.*—Its reactions, as for instance that with cobalt, are rendered indistinct by the presence of carbonic acid.

Commercial *trimethylina* (the medicinal propylamin) is probably never free from ammonia, which is readily ascertained in an acid solution by the test with iodohydrargyrate and caustic potassa. It should be perfectly colorless and clear, of a faint odor of ergot rather than of herring, and must burn like alcohol.

Conia, when quite pure, is colorless, and has a peculiarly sweet but rancid or somewhat musty odor. *Lobelina* resembles it in many respects; has an herbaceous odor, recalling that of prussic acid.

The alkaloids tested were freshly prepared for the experiments by the method described further on for nicotina.

EXAMINATION OF TOBACCO.

The material engaged for the experiments with fresh tobacco, —a dozen plants in full growth, collected after "topping" the buds,—unfortunately, by some delay in delivering, reached me in so damaged a condition as to reduce very considerably the extent of my investigations.

Of the uninjured leaves, with their petioles and ribs, 25 troy ounces were spread out to dry until their weight had been reduced to 1625 grains,—a loss of 86·5 p. c., though they were not yet perfectly air-dry.

Of this weight, only 245 grains had remained green through-

out, or showed scarcely any decolorization. The remainder had become more or less brown, on the upper surface principally, scarcely on the lower. They possessed a simple herbaceous odor, no pungency like that of ammonia, or commercial leaf, but a decidedly acrid taste.

One hundred and seventy-one grains of the green leaves were exhausted with boiling alcohol,—dilute alcohol acidulated with hydrochloric acid,—and the alcohol removed from the tincture by distillation. The residue indicated, when tested with tenth normal solution of iodohydrargyrate of potassium, (one cubic centimetre = 0·00405 of a gramme = 0·0625 of a grain of nicotina,) 2·345 grains of the alkaloid in 171 grains. 1·36 p. c. of the dry leaf = 0·1836 p. c. in the fresh.

Six hundred and sixty grains of the leaves which had become somewhat tainted were treated in precisely the same manner. They indicated, within a mere fraction of 9·37 grains of alkaloid, = 1·42 per cent. in the dry, = 0·1917 per cent. in the fresh state.

Of the fresh leaves, the juice of which was of a very decided acid reaction, 28·5 troyounces had, at the same time been placed in digestion at a moderate temperature for several days, with water acidulated with sulphuric acid. The 3700 cc. of liquor, resulting, contained, according to assay, 28·87 grains of nicotina, equal to 0·21 per cent. in the fresh state.

Ten troyounces of the same were macerated in the same manner; the resulting liquor, however, evaporated in a porcelain dish to the consistence of soft extract, and after redissolving tested with iodohydrargyrate; this indicated 4·75 grains; only 0·1 per cent were still present.

Commercial tobacco, known as Connecticut seed-leaf, and reported to be of the same variety and neighborhood as the fresh plants under examination, presented the usual properties of good tobacco. Its simple watery infusion was decidedly alkaline. Hydrogen gas and still more air at a slightly elevated temperature passed over the tobacco contained in a long tube, carried off very noticeable quantities of nicotina and ammonia. On distilling it with water, the vapors carried over nicotina, ammonia and its carbonate, and it was observed that the whole of the nicotina contained in a watery infusion could be evolved

by boiling, or distilling it with a large excess of caustic ammonia.

As the result of several assays with two troyounces at each time, I obtained as mean proportion of nicotina 13·25 grains, equal to 1·36 per cent. of the leaf, precisely the percentage in the first assay as given above.

Tobacco seed of the same variety possesses scarcely any acridity, except what arises from rancidity of the oil. The latter is at times extracted as from other seeds, and employed for household use. Decoction with acidulated water was found to be the best mode for their extraction.

Three troyounces, thoroughly bruised, were boiled for several hours with water and a little sulphuric acid. The filtered liquor indicated, with iodohydrargyrate, 6·46 grains of nicotina = 0.45 per cent. of the seed.

The leafstalks and ribs of the commercial leaf, and the liber of the green stalk, yielded noticeable quantities of the alkaloid, but their percentage was not determined.

For the purpose of identifying the alkaloid, or bases carried down by iodide of mercury from acidulated solutions in these several instances, the precipitates were washed with water—(since the test solution of iodohydrargyrate, besides containing a large excess of iodide of potassium, is too dilute to allow any trimethylina to be precipitated, no attention needed to be paid to any possible decomposition of the precipitate); it was then rubbed smooth in a mortar with a concentrated solution of protochloride of tin, to which were afterwards added small pieces of caustic potassa, so as to form an alkaline solution of protoxyd of tin. The result in this as well as in the case of all other bases, when their compounds with mercury are similarly treated, is that the mercury is reduced to the metallic state, its iodine or chlorine combining with the tin; the hydriodate of the base, then disengaged, is acted on by the excess of caustic alkali, and the base, when the mixture is now agitated with ether, is at once taken up in an almost pure condition.

After distilling off the ether, the residue is dissolved in dilute hydrochloric or oxalic acid, filtered, again shaken with alkali and ether or chloroform, which will then give a pure solution of the

base, provided no lengthy evaporation has been made use of, in preparing liquors for precipitation with mercury.

The ethereal solution obtained in this manner from precipitates of nicotina at first leaves the alkaloid as a pale, yellowish, oily liquid, surrounded by a greenish brown soft resin or impure wax, which, next to ammonia, is the cause of the pungent odor of tobacco. To a certain extent it is a product of the oxidation of the alkaloid, but when repeatedly dissolved in alcohol it is odorless and tasteless, and contains no nitrogen.

Pure nicotina obtained from the second or third solution in ether is colorless, has no odor at first, but acquires the pungency and odor of tobacco after some hours' exposure to the air, or on being heated. It agrees in most respects with the description given by Henry and Boutron-Charlard. Half a drop of it instantly killed a full-grown pigeon.

The liquids from which the precipitate of nicotina with mercury had been obtained, and which contained an excess of iodide, were, after filtering, rendered alkaline by the addition of caustic potassa. This causes a decided precipitate only in the case of commercial tobacco; the solutions from the dried leaves, in both the above experiments, gave a faint cloudiness. The filtrate from the seeds did not even show a trace of what would have indicated the presence of ammonia.

The precipitate produced in the first case was decomposed by alkali and protoxyd of tin, and then distilled; the distillate was converted into a plantinum salt, which had all the properties of that of ammonia.

Having become satisfied, by my preliminary examination, that no stronger alkali than ammonia was required to expel nicotina as well as trimethylina, parts of the solutions to which no mercury had been added were severally distilled with caustic ammonia.

In the case of the acid infusion of fresh tobacco, no bases besides ammonia (from the retort) and nicotina were to be found in the gases and the liquids which came over and were received in hydrochloric acid. Evaporated to dryness, and tested for trimethylina, no traces of it could be discovered by the reactions described above, nor any particular resemblance in the odor; nor could any inflammable gas be extracted from the residual chlorides on heating with caustic potassa or baryta.

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With an infusion of commercial tobacco, a great part of the nicotina comes over without the addition of an alkali, and nearly the whole quantity is obtained by adding a considerable excess of ammonia. This form is likewise free from trimethylina.

There is no perceptible difference in this respect between a decoction of the seed, and one of the fresh plant. The distillate contains only ammonia [intentionally] and nicotina.

From the watery distillate of ordinary tobacco, which had a milky appearance, but gave no deposit, and contained both ammonia and nicotina in solution, after acidulating with sulphuric acid, ether extracted a small quantity of a substance, which I believe to be identical with the soft resin described before.

Though the experiments delineated so far are evidently yet incomplete, they still serve to answer the question proposed as completely as was possible at this season of the year.

The conclusions which I beg to submit are—

1. That nicotina is the active principal in all parts of the plant before and after curing.

2. That there is in all probability no increase, but rather a loss of nicotina during the drying and curing, partly or wholly caused by volatilization; and

3. That the plant or its parts contain no trimethylina, nor any ammonia while fresh. —*Proc. Amer. Pharm. Asso.* 1865.

ON THE INVISIBLE RADIATION OF THE ELECTRIC LIGHT.

By John Tyndall, F. R. S.

Pending the preparation of my complete memoir, which may occupy me for some time to come, I would ask permission of the Royal Society to lay before the fellows a brief and partial summary of the results of my experiments on the invisible radiation of the electric light.

The distribution of heat in the spectrum of the electric light was examined by means of the linear thermo-electric pile, applied to the solar spectrum by Melloni, Franz, Müller, and others. The electric spectrum was formed by lenses and prisms of pure rock-salt, its width being equal to the length of the row of elements forming the pile. The latter, standing at right angles to the length of the spectrum, was caused to pass through

its various colors in succession, and to search the spaces beyond the region of color in both directions.

As in the case of the solar spectrum, the heat was found to augment from the violet to the red, while the maximum heating effect was observed beyond the red, and at a distance from the red, in one direction, equal to that of the green of the spectrum in the other.

The augmentation of temperature beyond the red in the case of the electric light is sudden and enormous. Plotting from a datum line the thermal intensity of the various portions of the spectrum, the ordinates suddenly increase in length beyond the red, reach a maximum, and then fall somewhat more suddenly on the other side. When the ends of the ordinates are united, the curve beyond the rod rises in a steep and massive peak, which quite dwarfs the luminous portion of the spectrum.

The comparative height and steepness of this peak are much greater than those obtained by Professor Müller for the solar spectrum. Aqueous vapor acts powerfully upon the invisible rays, and, doubtless, the action of this substance in our atmosphere has toned down the eminence beyond the red in Professor Müller's diagram. A solar spectrum, produced beyond the limits of the atmosphere, would probably exhibit as steep a peak as that of the electric light.

In the experiments now to be referred to, the rays from the electric light were converged by a small concave mirror. The glass mirror silvered at the back, which usually accompanies the camera of Duboscq's electric lamp, was one of the first employed. It was brought so near the electric light as to cast an image of the coal-points five or six inches in advance of the light. A solution of iodine in bisulphide of carbon, contained in a rock-salt cell, was then placed in front of the lamp: the light was thereby cut off, but the focus of dark rays remained, and various effects of combustion and incandescence were obtained at the focus. A mirror four inches in diameter, and silvered in front, will enable an experimenter to obtain most, if not all the results now to be mentioned. I also employ a mirror eight inches in diameter, and having a focal length of eight inches, with excellent effect.

It is not necessary to enclose the opaque solution in a rock

salt cell. The vessel intended for a solution of alum, which usually accompanies the lamp of Duboscq, and the sides of which are of glass, answers admirably. It is not, however, quite deep enough for the several tests to which I have subjected it, and in crucial experiments I employ a deeper vessel with rock-salt sides.

With the eight-inch mirror just referred to behind the electric light, the opaque solution in front, and the focus of invisible rays about six inches distant from the electric light, the following effects have been obtained:

1. Wood, painted black, when brought into the dark focus, emits copious volumes of smoke, and is soon kindled at the two spots on which the images of the two coal-points fall.

2. A piece of brown paper placed near the focus soon shows a burning surface, which spreads over a considerable space, the paper finally bursting into flame.

3. Black paper brought into the focus is immediately inflamed.

4. The wood of a hat-box similarly placed is rapidly burnt through, and usually bursts into flame.

5. The end of a cigar, placed at the dark focus, is instantly ignited.

6. Disks of charred paper, placed in the focus, are raised to brilliant incandescence, surfaces of considerable extent being brought to a vivid glow. Charcoal is also ignited.

7. A piece of charcoal, suspended in a receiver of oxygen, is ignited in the dark focus and caused to burn brilliantly, the rays after crossing the glass of the receiver being still sufficiently powerful to heat the coal up to incandescence.

8. A mixture of oxygen and hydrogen is exploded in the dark focus by the ignition of its envelope.

9. A piece of zinc-foil, blackened on one side to diminish reflection, is pierced and inflamed. By gradually drawing the strip, once inflamed, across the focus, it may be kept blazing for a considerable length of time. This is a particularly beautiful experiment.

10. Magnesium wire, presented suitably to the focus, burns with its intensely luminous flame.

In all these cases the effect was due, in part, to chemical action; this, however, may be excluded.

11. A plate of any refractory metal, sufficiently thin, and with its reflective power suitably diminished, is raised to incandescence in the dark focus. Gold, silver, copper, aluminium, and platinum have been thus rendered incandescent.

12. Platinised platinum shows the effect best; in a thin leaf it may be rendered white-hot, and on it is depicted an incandescent image of the coal-points. When the points are drawn apart, or caused to approach each other, their incandescent images conform to their motion.

The assemblage of phenomena here described, and others to be referred to in my complete memoirs, may, I think, be properly expressed by the term "calorescence." This word involves no hypothesis, and it harmonises well with the term fluorescence, now universally employed with reference to the more refrangible end of the spectrum.*—*Chem. News*, London, Feb. 10, 1865.

ON THE AQUEOUS EXTRACT OF JALAP.

By Alfred B. Taylor.

"Does the aqueous extract prepared from Jalap that has been previously exhausted by alcohol, possess any medicinal properties, or does the alcoholic extract of jalap fully represent its virtues?"

A superior quality of jalap was selected for this experiment. It was reduced to fine powder, and having been exhausted with

* On December 5, last, I tried the passage of the rays from the electric lamp through a great number of different colored glasses. Incandescence was obtained through almost all of them; and in one instance, the radiation passing through a blue glass, the thermograph of the coal points was of a pink color. A thick black glass, obtained from Mr. Ludd, when held in front of the lamp, was found to be not perfectly opaque, still the platinum could not be raised to incandescence at all when placed in the focus. Being called away from the Royal Institution early in the afternoon, I gave directions to my assistant, Mr. Barrett, to continue the experiments. He informs me that on placing in the path of the rays a combination of two thin plates of black glass, one transmitting a whitish-green and the other a deep red, the light was entirely intercepted and feeble, though distinct incandescence was obtained at the focus. With radiation through the solution of iodine, the thermograph on this day rose to a white heat.

alcohol, was treated with water; the infusion was evaporated carefully, and the resulting extract was subjected to experiment.

Thirty grains were taken by myself at 10 o'clock, A. M. At 12 o'clock, M., no action having been produced, the dose of thirty grains was repeated. At 1 o'clock the dose of thirty grains was again taken. This dose was repeated every hour until eight doses were taken; it was then discontinued, no apparent effect having been produced, and the conclusion having been arrived at, that such an extract possessed no remedial powers. It has been stated that this extract is diuretic in its properties, but I have not been able to discover diuretic, or indeed any other effects from this dose of 240 grains.

From this experiment it would appear that "Extractum Jalapæ," of the U. S. Pharmacopœia, is an unscientific preparation, being only about one-fourth as strong as "Resina Jalapæ;" the comparative yield of aqueous extract and alcoholic extract being about three of the former to one of the latter.—*Proc. of the Amer. Pharm. Asso.* 1864.

Philadelphia, September, 1864.

ON PYROXYLIN.

By MM. Pelouze and Maurey.

(Continued from page 40, January number)

Composition of Pyroxylin.—In 1847 we determined the composition of pyroxylin, and represented it by the following formula—$C_{24}H_{17}O_{17}.5NO_5$.

We must first find out whether we operated on a product different to Lenk's pyroxylin, and if the two are chemically identical, whether this formula is correct.

We have conducted these researches with the greatest possible care, and believe we have surmounted the difficulties of the combustion of pyroxylin. We found the pyroxylin of Hirtenberg and Bouchet chemically identical, and found for them a formula differing from the previous one by only one equivalent of water.

This formula is $C_{24}H_{18}O_{18}.5NO_5$.

It is so like the previous formula—$C_{24}H_{17}O_{17}.5NO_5$—that analysis alone would not be sufficient to justify the alteration

without being supported by the amount of the yield. In fact, the new formula supposes a yield of 177·78 of pyroxylin for 100 of cotton, while the old formula corresponds to a yield of only 175. The direct experiments described above gave the figure 178.

All the gun-cottons we analysed were previously washed in a mixture of alcohol and ether, to remove some milliêmes of fatty and soluble matters, then dried for several hours in a stove at a temperature between 40 and 50°.

All were of the composition above described, and gave the following figures:—

Carbon	25·00
Hydrogen	3·13
Oxygen	59·72
Nitrogen	12·15
	100·00

The Action of Heat on Pyroxylin.—General Lenk ascribes the unsatisfactory results obtained in France by the Commission of 1846 to the fact that not sufficient attention was paid to the manner in which the pyroxylin was prepared, and to operating upon an insufficiently defined nitred product. By taking advantage of conditions most favorable to nitrogenisation, he believes he has obtained a pyroxylin very difficult to decompose.

We will not discuss the theoretical value of this assertion, which does not seem to us to be very great. It is, on the contrary, more probable that gun-cotton would decompose more readily the less like cellulose, and, consequently, the more nitred it became. However this may be, General Lenk says that pyroxylin made by his process will not explode below 136° C.

We have made this important point the subject of numerous experiments.

These experiments were first made with an experimental matrass, open or closed, and plunged into a bath of boiling water.

All the samples heated in this way to 100° were sooner or later decomposed, and in a few minutes a disengagement of nitrous vapors took place.

The decomposition takes place in different ways, and can-

not be reproduced at will. Four methods of decomposition at 100°, having the common characteristic of the disengagement of nitrous vapors may be given :—

1. The pyroxylin detonates violently.

2. It decomposes without detonating, leaving a white, pulverulent, acid residue, partially soluble in water, containing no nitrogen, and forming about half the weight of the pyroxylin.

3. It leaves a yellow, amorphous, inexplosible residue, partially soluble in water, and reducing, like glucose, the double tartrate of copper and potash.

4. It gives a small residue (only 8 to 10 per cent. of its weight), and a black matter, in appearance like charcoal. In this case the matrass is entirely covered with a yellow powder, which dissolves in alkali with considerable disengagement of ammonia (this matter is apparently ulmate of ammonia). From this solution acids precipitate a dirty yellow body, also soluble in alkalies. The charcoal-like residue disengages ammonia under the action of potash. This production of ammonia by the simple action of heat from a matter formed of nitric acid and cellulose is very remarkable.

Other experiments made on various pyroxylin at 90° and then at 80° gave exactly the same results, except that decomposition took place after several hours instead of a few minutes.

At 60°, and even at 55°, pyroxylin is still decomposed. After a few days the matrass becomes full of dense reddish vapors, and the same non-nitrogenised pulverulent residue of which we have already spoken is obtained. No combustion was observed in these latter experiments.

We moreover produced detonation by putting about one gramme of pyroxylin into one of Gay-Lussac's copper stoves containing oil at only 47°. The pyroxylin thus decomposed was from a specimen prepared by forty-eight hours' immersion, and washing by Lenk's process.

These experiments plainly show that, contrary to General Lenk's assertion, his pyroxylin does not offer more resistance to the action of heat than that of Bouchet, the Austrian silicated pyroxylin having under all conditions behaved itself in the same manner as the others.

From its decomposing at about 50°, it may be asked whether pyroxylin is not liable to decompose even at the ordinary temperature. Is it, for instance, likely to detonate spontaneously when kept in large masses in magazines? Several chemists have given examples of the decomposition of pyroxylin at the ordinary temperature. They have generally mentioned as products of this decomposition nitrous vapors and several oxidised bodies like formic, oxalic, and acetic acids, and residues of gummy or saccharine substances, and have endeavored to ascribe these instances of the alteration of pyroxylin to imperfect washing.

We will in the first place remark that it is easy to wash small quantities of materials, and that as the destructive action of sulphuric acid on pyroxylin is perfectly established, it is evident that the greatest care should be taken to eliminate every trace of it, and that consequently the most careful washing is necessary.

Without entering into the details of the known cases of the decomposition of pyroxylin at the ordinary temperature, we will describe the decomposition we observed in some specimens made in 1847, which had been washed with especial care either in pure or alkaline water.

Of twenty-eight samples placed in small stopped flasks, and a few grammes in weight, sixteen underwent alteration of some kind.

We took at hazard one of the altered specimens, and examined it. It was originally composed of six grammes of pyroxylin which had been washed in potash water and left since March 17, 1850, or fourteen years, in a flask imperfectly stopped. It had left a residue representing 79 per cent. of a dark yellow color, and considerable amount of acid, but no sulphuric acid. This residue dissolved completely in water, and like glucose reduced tartrate of copper and potash. Its boiling solution gave a decided odor of vinegar, and, what was very remarkable, disengaged ammonia under the action of potash.

There are, then, under the ordinary atmospheric conditions, incontestable instances of the spontaneous alteration of pyroxylin, which, moreover, had been washed in alkaline water.

Now we have shown that pyroxylin is sure to decompose with

heat, that in some cases it detonates, and in others apparently identical it is destroyed without combustion. Why should it not be the same at a low temperature? Why should we not add to the instances of simple decomposition those of detonation? The analogy is so evident that we need not have recourse to the supposition of imperfect washing to explain the combustion of pyroxylin.

The Hirtenberg pyroxylin itself exploded in the magazine at Simmering, and in the investigation made July 31, 1862, it was merely decided that the accident was due to spontaneous combustion. It has also been attributed to the ordinary powder also contained in the magazine, but this supposition is inadmissible, as for several centuries there has been no known instance of spontaneous combustion of gunpowder. We must not, of course, as was done in an Austrian paper, confound accidents during manufacture, carelessness of workmen, or faulty mechanism, with the explosions produced by no other cause than the reactions among the elements of the compound.

Comparison of Lenk's Pyroxylin with those of Bouchet relative to their Propulsive and Blasting Qualities.—It remains for us to give the results of the experiments made with Navet's pendulum to compare the propelling powers of these two kinds of gun-cotton. Twenty-five charges were fired with Lenk's pyroxylin, fifteen with those of Bouchet, three grammes for each charge, and round balls weighing each 25 gr. 50.

Taking first the medium velocity of the balls, and then the greatest and the least, we have—

	Gun-cotton.	
	Hirtenberg.	Bouchet.
	m.	m.
Medium velocity,	385·36	394·32
Greatest "	441·53	485·94
Least "	357·63	357·63

Differences much greater than those presented by the above figures are sometimes found in firing from the same specimen. For instance, the pyroxylin brought from Austria by General Lenk was fired twice, giving—

	m.
On February 17,	374·40
" March 8,	408·40

From these results we may conclude that both kinds have the same ballistic force.

In these experiments the gun was filled to the height of 0·05m. It was proposed to ram it harder, reducing the height to 0·03m; but the first charge fired by this method, and with three grammes of General Lenk's pyroxylin, burst the gun barrel.

This accident has also happened in firing charges of the Bouchet pyroxylin, showing the resemblance between the explosive property of the French and Austrian pyroxyles.

We will not here describe all the attempts made by the Commission of 1846 to obviate the inconvenience arising from the too rapid combustion of pyroxylin, but will confine ourselves to those made for the same purpose by General Lenk.

He first unsuccessfully tried compressed cartridges, then some which he called long cartridges, formed of paper cylinders covered with gun-cotton yarn. With these an Austrian 12-pounder charged with about 481 grammes of gun-cotton gave a velocity of 427 metres.

But this speed, though the greatest attained by the experiments in question, is less than that obtained in France with a similar gun, and with a charge of 2 kilogrammes of ordinary powder, which was about 480 metres, and which the Commission of 1846 endeavored to attain by using 667 grammes of pyroxylin.

Now, it has not been proved that Lenk's cartridges would not injure pieces of ordnance were the quantity of pyroxylin increased so as to obtain the same speed as in France.

The author of one of the Austrian reports recognizes the fact that the results obtained are unsatisfactory, and that the mechanical means employed to prevent the development of the injurious properties of the pyroxylin neutralise part of its propelling power; and arrives at the conclusion that the problem will be resolved only when firearms are made in which the injurious effect may be disregarded. This is also our opinion; but how to overcome the objection of the spontaneous explosions, which to us is the first consideration?

The result of our researches is, that though the composition, method of production, and chemical properties of pyroxylin may

be better known, the principal point—its use for firearms—remains in nearly the same state in which it was left by the French Commission of 1846.

There is nothing to lead us to suppose it possible, in the present state of our knowledge, to prevent the spontaneous explosion of pyroxylin, or to get rid of its injurious properties.—*Chem. News*, Oct. 29, 1864, from *Comptes Rendus*, lix., 863, 64.

BARON LIEBIG'S SOUP FOR CHILDREN.

With that remarkable estimation of the greatness of small things which is one of the most valuable of his many high intellectual qualities, and with a tender appreciation of the importance of small people, Baron Liebig devotes a special article in an English scientific periodical to the description of a new article of diet which he conceives to be the most fitting substitute for the natural nutriment for those children who are by circumstances robbed of their mother's milk. It is well known that cow's milk does not adequately represent the milk of a healthy woman, and when wheaten flour is added, as it commonly is, Liebig points out that, although starch be not unfitting for the nourishment of the infant, the change of it into sugar in the stomach during digestion imposes an unnecessary labor on the organization, which will be spared it if the starch be beforehand transformed into the soluble forms of sugar and dextrine. This he effects by adding to the wheaten flour a certain quantity of malt. As wheaten flour and malt flour contain less alkali than woman's milk, he supplies this when preparing the soup. This "soup" may be shortly prepared as follows: "Half an ounce of wheaten flour, and an equal quantity of malt flour, seven grains and a quarter of bicarbonate of potash, and one ounce of water, are to be well mixed; five ounces of cow's milk are then to be added, and the whole put on a gentle fire; when the mixture begins to thicken it is removed from the fire, stirred during five minutes, heated and stirred again till it becomes quite fluid, and finally made to boil. After the separation of the bran by a sieve, it is ready for use. By boiling it for a few minutes it loses all taste of the flour."

The immediate inducement for his making the soup was that

one of his grand-children could not be suckled by its mother, and that another required, besides his mother's milk, a more concentrated food. In both cases, as well as in other families where it had been introduced, the soup proved an excellent food, the children thrived perfectly well, and many a petty suffering disappeared after some weeks' use of the soup. He often takes it prepared with ten parts of milk and two parts of malt flour, with tea, for his breakfast. He adds that "Dr. Von Pfeufer, the most renowned physician in Munich, has induced the apothecaries of the town to keep for sale a mixture of half an ounce of malt flour and seven grains and a quarter of bicarbonate of potash, milk and wheat flour being supposed to be in every house. The malt flour ought to be always freshly made from the malt.—*Boston Medical and Surgical Journal*, March 16, 1865, from *The Lancet*, Jan. 7.

THE PREPARATION OF LITMUS.

By M. De Luynes.

Two different products are included under the name of litmus, that in sheets and that in cakes. The latter is used as a reagent; with water or alcohol it gives a violet blue liquid, which becomes light red by contact with acids.

The process for preparing litmus consists in coloring orchil lichens under the influence of air and ammonia, in the presence of a large excess of alkaline carbonate. M. Gelis has tested the exactness of these indications, and has obtained very excellent litmus by treating orchil lichens, mixed with half their weight of carbonate of potash, by ammonia. But whatever the mode of preparation, either carbonate or sulphate of lime is added to the litmus paste, to dry and preserve the coloring matter, which constitutes but a very small fraction of the total weight of the cakes.

M. Dumas has shown that when orcine becomes colored under the influence of air and ammonia, it produces only one coloring matter, which is orceine. By modifying the circumstances under which orcine becomes colored, M. de Luynes has succeeded in preparing a product identical in its properties with litmus. As litmus has not yet been obtained by means of orcine, and as some chemists seem to doubt whether it can be so derived, M.

de Luynes has adopted the following process :—He mixed orcine with twenty-five times it weight of crystallized carbonate of soda, and five times its weight of water, with the addition of a weight of liquid ammonia, not more than equal that of the orcine, in imperfectly stopped mattrasses. He heated the whole to between 60° and 80° for four or five hours, taking care to stir it from time to time. The dark violet-blue liquid he diluted with water and saturated with a slight excess of hydrochloric acid, which precipitated the coloring matter ; this latter washed and dried is pure litmus.

Litmus thus prepared is in the form of small irregular masses with the variegated metallic reflections common to most coloring matters. It is very slightly soluble in cold water, to which it imparts a wine-colored tinge, which by contact with acid turns to the color of onion skin, and with alkalies to violet blue. In alcohol, also, which it colors yellow. Concentrated sulphuric acid dissolves it, taking a very rich violet-blue color, which becomes light red on the addition of a large quantity of water.

The alcoholic solution, diluted with water, constitutes a reagent extremely sensitive to the slightest trace of alkaline substance. By adding a little potash to it, a blue liquid is obtained, which, in contact with acids, sulphuretted hydrogen, and other compounds, behaves in the same way as ordinary litmus solution.

Dry litmus, heated in tube, gives an abundant deposit of carbon, and disengages ammonia.

The preparation of ordinary litmus solution requires some time; it does not keep long without altering, and to render it sensitive the excess of alkali it contains must be saturated. M. de Luynes' product keeps without altering in the dry state : the cold solution can be very rapidly prepared, and may be immediately employed in any determinations by standard solutions.—*Lond. Chem. News, March* 31, 1865.

ON COBALTIC ACID.

The existence of cobaltic acid, which has long been suspected, seems to be proved by M. Winkler's experiment. According to him, by boiling different cobalt products, but more especially the

metal in powder, with a concentrated solution of caustic potash, an intensely blue liquid is obtained, containing cobaltate of potash.

The proper proportions seem to be one part of metal in a spongy state (produced by the reduction of protoxide by means of hydrogen or starch,) one part of caustic potash, and three of water; the boiling is continued until the dark blue color is produced, after which the mixture is filtered through asbestos.

Cobaltate of potash is not very stable; it cannot be evaporated to dryness; its solution decomposes spontaneously, and the more rapidly the more it is diluted; acids precipitate from it hydrated protoxide with disengagement of oxygen, a part of which dissolves in the water, forming binoxide of hydrogen, hydrochloric acid is decomposed, and its chlorine set at liberty. Sulphurous acid is transformed into sulphuric acid, which combines with the protoxide of cobalt. By estimating the cobalt and determining the quantity of sulphuric acid formed in a given volume of cobaltate of potash, the author has ascertained the composition of cobaltic acid; he represented it in his first paper by CoO_3, and afterwards by CoO_2. It would be interesting to compare this compound with that obtained by M. Schwartzenberg by fusing oxide of cobalt with potash in contact with the air.—*Lond. Chem. News, March* 31, 1865.

PREPARATION OF SULPHATE OF AMMONIA.

MM. Margueritte, Lalouet, de Sourdeval, and Worms, of Romilly, have, with the coöperation of the able director of the Compagnie Richer, established at Bondy a large factory of sulphate of ammonia, producing daily from 7000 to 8000 kilogs. The raw material is the liquor of the Bondy basins, which is merely the liquor of cesspools left to stand for a time sufficient to exhaust the fermentation, and transform the urea into carbonate of ammonia, the solution of which is decanted. Ammonia exists in these liquids in the state of sesquicarbonate or bicarbonate.

The distilled ammonical liquid, which is perfectly limpid, marks

18° on Baume's areometer, and even more than that, for the solid carbonate may be obtained.

Ammoniacal sulphate and hydrochlorate are prepared by the direct action of the ammoniacal liquid on sulphuric acid at 55°, or hydrochloric acid at 22°. The evaporated salts are sublimed in the ordinary manner on hearths heated by the waste heat.

The manufacture of ammoniacal salts will before long absorb all the liquids daily carried to Bondy; and if, as it is to be hoped, some means is found to accelerate the production of powdered night-soil, the manufactory of Bondy, which is very favorably situated, will become no greater nuisance than others of its kind.

M. Margueritte is now engaged on a new improvement in the manufacture of sulphate of ammonia, in which he substitutes gypsum for sulphuric acid.

Carbonate of ammonia, by double decomposition, produces carbonate of lime and sulphate of ammonia. This reaction is well known, but what is new is that this reaction is singularly facilitated by the addition of a small quantity of chloride of calcium.—*Lond. Chem. News, March* 31, 1865.

Minutes of the Philadelphia College of Pharmacy.

The Forty-fourth Annual Meeting of the Philadelphia College of Pharmacy was held at the College Hall, on Monday evening, March 27th, 1865.

The President, Charles Ellis, in the Chair. Eighteen members present.

The Minutes of the last Stated Meeting were read and adopted.

The Minutes of the Board of Trustees were read by A. B. Taylor, Secretary of the Board. They inform that there has been added to the College Library, one hundred and fifty-five volumes during the past year, of which seventy-six volumes were acquired by purchase and seventy-nine by donation.

The Matriculants in the School of Pharmacy for the session 1864—65 numbered one hundred and six.

At the late Commencement of the College, the degree of Graduate in Pharmacy was conferred on twenty-nine graduates, as follows:

Blair, Andrew,	Philadelphia,	Pa.,	*Psidium Pyriferum.*
Blomer, Augustus P.,	"	"	*Eupatorium Perfoliatum.*
Clark, Thomas C.,	"	"	*Trials and Difficulties of Professional Life.*
Cornell, Edward A.,	Williamsport,	"	*Polygonum Punctatum.*
Ditman, Andrew J.,	Philadelphia,	"	*Starch, Gluten and Fecula.*
Gross, George A.,	Harrisburg,	"	*Several Formulæ of the U. S. Pharmacopœia.*
Harry, J. W.,	Conshohocken,	"	*Sanguinaria Canadensis.*
Heller, Marx. M.,	Cleveland,	Ohio,	*Cypripedium Pubescens.*
Hillary, John F.,	Philadelphia,	Pa.,	*Causes and Effects of Health and Diseases.*
Huber, Milton,	Norristown,	"	*Phytolacca Decandra.*
Keen, Francis,	Philadelphia,	"	*Guaiaci Lignum.*
Kennedy, Charles W.,	"	"	*Arctostaphylos Uva Ursi.*
Lindsay, John B.,	"	"	*Gossypii Radicis Cortex.*
Milner, James P.,	"	"	*The Apothecary & Physicians.*
Moser, Americus H.,	Allentown,	"	*Lactucarium.*
McElroy, James B.,	Philadelphia,	"	*Preparations of the Pharmacopœia.*
Notson, Charles B.,	"	"	*Sanguinaria Canadensis.*
Orth, Frederick C.,	Hummelston,	"	*Arnica Plaster.*
Preston, David,	Fallstown,	Md.,	*Capsicum Annuum.*
Ranck, J. W.,	Philadelphia,	Pa.,	*Datura Stramonium.*
Rinker, Wm. H.,	Roxborough,	"	*Geranium Maculatum.*
Rubincam, Charles E.,	Philadelphia,	"	*Ceanothus Americanus.*
Rutherford, Charles,	"	"	*Iodide of Potassium.*
Smith, Wilson B.	"	"	*Sarracenia Purpurea.*
Vogelbach, Edmund,	"	"	*Petroleum.*
Walker, John Thomas,	"	"	*Medicinæ Puritas.*
Wendel, Edward,	"	"	*Sambucus Canadensis.*
Wendel, Frederick,	"	"	*Phosphorus and its Compounds.*
White, James,	"	"	*Phytolacca Decandra.*

The Minutes of the Board of Trustees inform farther, that a portrait in oil of Prof. Joseph Carson has been presented to the College by the graduating class of 1865.

The Committee appointed to prepare a memorial of the late Henry Troth, presented an interesting sketch of his life, drawn up by Samuel F. Troth, which was read, and, on motion, referred to the Committee on Deceased Members.

Dillwyn Parrish read an interesting memorial of Chas. Marshall, the first President of this College, which, on motion, was referred to the Publishing Committee.

The Publishing Committee report, that the American Journal of

Pharmacy has been issued regularly since the last Annual Meeting. Owing to the increased cost of paper and printing, the size of the number was reduced in September last from 96 to 80 pages, the subscription price remaining unchanged. By this course the College has not been called upon for funds, as the collections have proved sufficient to carry on the work, with rigid economy; yet the Editor regrets his inability to republish several valuable papers, owing to the cost of their illustrations.

The condition of the finances of the Journal are exhibited in the appended report of the Treasurer, which presents a small balance in favor of the Committee.

C. Ellis, A. B. Taylor,
W. Procter, Jr., J. M. Maisch,
E. Parrish.

The Committee on Latin Labels presented a report, which was read and accepted, from which we learn that labels to the value of $574 remain on hand, and a cash balance of $99.

The following Report of the Committee on Sinking Fund was read, accepted, and an order directed to be drawn on the Treasurer of the College, as requested.

Philadelphia, Third mo. 27th, 1865.

To the Philadelphia College of Pharmacy:

The Committee on the Sinking Fund report, That since the last Annual Meeting of the College, they have received from the Committee on Latin Labels five hundred dollars, and have paid that amount to S. N. James on account of mortgage, reducing the debt of the College to $1000.

From the Annual Report of our Treasurer, there appears to be rather more in his hands, together with the annual subscriptions now due, than necessary for the current expenses of the College; and we therefore propose that an order be drawn in favor of the Committee on the Sinking Fund for two hundred dollars, to be applied to the remaining debt of the College. Respectfully,

Samuel F. Troth,
Ambrose Smith,
Edward Parrish,
Committee.

A letter from Prof. Chas. Murray, of Buenos Ayres, dated December 26, 1864, was read by the Corresponding Secretary, Prof. Procter. Mr. Murray acknowledges the notice of his election to honorary membership in this College.

After some discussion on a proposed alteration in law 5, section 8 of the By-laws, concerning members, the subject was for the present laid upon the table.

The propriety of publishing the list of the graduating class in the Jour-

nal in the order of merit, having claimed consideration, it was deemed inexpedient at this time to depart from the usual alphabetical order.

Mr. Thomas S. Wiegand informed the College of the establishment of an Alumni Association, consisting of the graduates of this College previous to the year 1850, and such others, since that date, as may have been elected to membership. One of the objects of the Association being the establishment of a Pharmaceutical Laboratory in connection with the College, the following resolution, offered by Prof. Parrish, was adopted:

Resolved, That the subject of establishing a Laboratory for instruction in Practical Chemistry and Pharmacy in the College Building, and a Professorship of Botany for imparting the elements of that science, by lectures during the summer season, as well as throughout the ordinary, lecture term, is recommended to the consideration of the Board of Trustees.

The annual election of officers being ordered, the tellers reported the following officers elected.

President,	Charles Ellis.
First Vice-President,	S. F. Troth.
Second Vice-President,	Dillwyn Parrish.
Treasurer,	Ambrose Smith.
Recording Secretary,	Chas. Bullock.
Corresponding Sec'y,	Wm. Procter, Jr.

Trustees.

Prof. Robert Bridges, S. N. James, T. M. Perot,
S. S. Bunting, J. T. Shinn, J. M. Maisch,
T. S. Wiegand, D. S. Jones.

Publishing Committee.

Charles Ellis, Edward Parrish, John M. Maisch,
A. B. Taylor, William Procter, Jr.

Committee on Sinking Fund.

Samuel F. Troth, Ambrose Smith, Edward Parrish.

Delegates to the American Pharmaceutical Association.

Dr. W. H. Pile, E. Parrish, J. M. Maisch,
E. T. Ellis, D. S. Jones.

On motion, the College then adjourned.

CHAS. BULLOCK,
Recording Sec'y.

Editorial Department.

THE U. S. ARMY LABORATORY AT NEW YORK.—This extensive Laboratory, located at Astoria, on Long Island, a few miles from the city of New York, was destroyed by fire on Monday morning, the 20th of February. The fire, which occurred in the day time, commenced in the ceiling over the drying room, which must have been improperly constructed. From this point the flames rapidly extended to other parts of the building, which was soon a heap of ruins, including the apartments occupied by Dr. J. H. Bill, Ass. Surg. U. S. Army, whose chemical knowledge had caused him to be selected as the director of the Laboratory. The loss to the Government, variously estimated, is said to be $50,000, a portion of which was probably stock. We understand Dr. Bill made a statistical report to the Washington Bureau some time ago which was highly favorable to the usefulness and economy of this Laboratory.

As the establishment of the two Laboratories was an act of the late Surgeon-General Hammond, without adequate authority, Surgeon-General Barnes declined re-establishing this without an act of Congress. An idea may be formed of the magnitude of the operations of the Astoria Laboratory, when one House, since the fire, has been called upon to powder for the Army 27 cases of opium, 32 ceroons of ipecac, 18 ceroons of calisaya bark, and 280 bags of cubebs, and other things in proportion.

ST. LOUIS COLLEGE OF PHARMACY.—We are informed by Mr. Enno Sander, of St. Louis, that the College there have established a Chair of Botany as the first effort in connection with the School of Pharmacy, to be commenced the ensuing winter; and Prof. Wadgymar, now of the Academy of Christian Brothers, is the occupant.

The Dispensatory of the United States of America. By GEORGE B. WOOD, M. D., &c., and FRANKLIN BACHE, M. D., &c. &c. Twelfth Edition, carefully revised. Philadelphia: J. B. Lippincott & Co. 1865. Pp. 1704. Octavo.

After an interval of more than seven years since the eleventh edition, a new edition of the Dispensatory, long looked for, has been received. In appearance it is like its predecessors, having the same size and style of type, and the page, though a little larger, appears the same. Many of the additions are in notes, in small type, in the first and second parts; whilst the third part, on non-officinal drugs and medicines, has been considerably extended. The book, though not so thick as its predecessor, has one hundred and twenty more pages,—the paper being thinner than in earlier editions.

We cannot do better than to give the Authors' own reasons why this edition has been delayed, and why its revision required an unusual amount of revisional labor. Few readers require to be informed of the decease of Dr. Bache, one of the authors of the work, which threw the whole responsibility of the revision upon Dr. Wood, at a time when circumstances called for an unusual number of changes and great clearness of judgment.

"The delay of the revision was caused by the unfinished state of the Pharmacopœias, which were to constitute the basis of the new edition, as the old Pharmacopœias had done of the preceding. It was known that the U. S. Pharmacopœia was undergoing a thorough revision, with many and important changes; and it was equally notorious that the three British Pharmacopœias were in the course of consolidation into one; which, it was supposed, would retain few features of the former works, and almost none unaltered. Under these circumstances, it would have been folly to undertake a new revision of the Dispensatory, which, when completed, would in a short time have had its whole foundation undermined."

"In the second place, the changes made both in our own and the British Pharmacopœias, rendered indispensable similar changes in the Dispensatory. One not familiar with the subject can scarcely appreciate the constant vigilance, the unceasing attention to the minutest details running through every part of the work, which were necessary to obviate confusion and prevent embarrassing mistakes in making the book conform to the present standards. Not only was it requisite to introduce all that was new, to alter positions in conformity with the changes in the standards, and to notice and discuss all modifications, whether in substance or in form; but there was a constant recurring necessity to solve the various practical problems arising from the substitution of a single one for the three former British Pharmacopœias, which were referred to at a greater or less length in almost every page.

"Taking these circumstances into consideration, and reflecting, in the third place, how greatly the field of labor has been extended for the surviving author by the decease of his colleague, the reader will understand that he has had a very heavy task upon his hands, and will not be disposed to censure him for a delay in the appearance of the present edition, which could have been shortened only at the expense of the usefulness and trustworthiness of the work itself."

In glancing over the pages on Materia Medica, detailed notices of many new articles, officinal in either the U. S. or British Pharmacopœias, will be found, among which are chromic, lactic and glacial phosphoric acids, Bela, Berberis, Caffea, Cypripedium, Gelseminum, Gutta percha, Hydrastis, carbonate of lithia, permanganate of potassa, Leptandra, Ol. Camphoræ, Ol. Theobromæ, Ol. Thymi, Pepo, Rottlera, Santonica, Sodæ sulphis, spt. Frumenti, spt. Myrciæ, vanilla, &c., besides many to be found in the third part of the work of lesser importance or not officinal. An examination

of the leading articles of the Materia Medica will show that Dr. Wood has brought the subjects fully up to the time of revision.

The most laborious part of the revision refers to the second—or pharmaceutical part—which the new Pharmacopœias have required to be greatly changed, both in arrangement and detail. In the preliminary notice of this portion of the book, it will be observed that percolation has been more fully dilated upon than heretofore, as the principal means of extraction of our Pharmacopœia. Owing to the adoption of avoirdupois weight in the British Pharmacopœia, all the recipes from that work employ that weight. To avoid the great liability to confusion thus engendered, Dr. Wood has indicated in almost every case the kind of weight to be used. A great number of formulæ for fluid extracts and other preparations have been introduced in various parts of the work, besides those of the Pharmacopœia, which will be found noted in the index.

The changes and additions are so numerous that, in the short time and small space at our disposal, we have not attempted to exhibit them; considering that the work will soon be in the hands of a large number of pharmaceutists, who, by a direct examination, can satisfy themselves.

The additions to part third amount to about thirty pages of small type, among which the author has particularly specified the articles on anilin, Calabar bean, carbolic acid, coal tar, peroxide of hydrogen, petroleum, propylamin, sorghum, thallium, upas, &c. It has been his aim to bring into this part everything of any decided interest worthy of notice in a Dispensatory outside of the officinal lists, and the reader will find it much extended.

The table of chemical equivalents has been carefully revised and extended, and those relating to specific gravity have been revised and extended under the care of Dr. W. H. Pile, of Philadelphia, whose familiarity with all matters relating to this branch of the subject is well known. We understand the nominal retail price of the Dispensatory is ten dollars, on which a liberal discount is made by the publishers.

We cannot conclude this notice better than by giving the following extract from the Preface: "Finally, it may be permitted to the surviving author to say that, considering his advanced age, it is hardly probable that he will live to see, or at least participate in, another revision; and under these circumstances, to express his warm thanks to the members of the Medical and Pharmaceutical Professions, who have in so many ways evinced a kind regard for him personally, and a disposition to judge favorably if not partially of his works."

Report of the Pennsylvania Hospital for the Insane for the year 1864. By Thomas S. Kirkbride, M. D., Physician-in-Chief. Published by order of the Board of Managers. Philada., 1865; pp. 66.

The reception of the annual report of this excellent Institution is acknowledged.

Medical Lexicon. A Dictionary of Medical Science; containing a concise explanation of the various subjects and terms of Anatomy, Physiology, Pathology, Hygiene, Therapeutics, Pharmacology, Pharmacy, Surgery, Obstetrics, Medical Jurisprudence and Dentistry: notices of climate and mineral waters, formulæ for officinal, empyrical and dietetic preparations, with the accentuation and etymology of the terms; and the French and other synonymes, so as to constitute a French as well as an English Medical Lexicon. By ROBLEY DUNGLISON, M. D., LL. D., &c. Thoroughly revised and very greatly modified and augmented. Philadelphia: Blanchard & Lea, 1865; pp. 1047 octavo.

On another occasion (January, 1858) we have noticed this work, so long before the medical reader, and then much improved on previous editions. There is, perhaps, no class of books more liable to contain errors than dictionaries of science, where the scope is so great as to embody such a vast variety of subjects. The compiler, unless his erudition is very great, is so dependent on published statements of facts, or substances, or principles, with which he is not familiar, that he is not always able to correct the errors or supply the omissions of others, and thus occurs a fruitful source of deficiency. Besides these, which are incident to the first edition, are those which arise out of an imperfect acquaintance with the progress of knowledge in its transition state in the Journals and before it has been digested and made a part of regular treatises. The revisor of such a work as that before us, needs to be constantly on the alert to gather facts as they are developed, and to modify the statements in his pages to correspond with this progress in each department, always, however, subject to his judgment of its truthfulness. Hence, the author of a dictionary of the medical sciences must be, at least theoretically, an anatomist, a physiologist, a surgeon, a therapeutist, an obstetrician, a pharmacologist, a chemist, a botanist, a pharmaceutist, and, above all, a practitioner of medicine. Added to this, his classical knowledge must be extensive and critical; his acquaintance with language varied and exact; and his industry and perseverance perennial and untiring. Among those who have undertaken this department, we know of no one better fitted by his extensive reading, classical attainments and experience as an author, than Dr. Dunglison; and, in preparing this last edition for the press, he has given more than usual time and attention to the general details, and more especially to the etymology and accentuation of the terms. In regard to the latter, however, no general division of the words into syllables, as in Thomas' Medical Dictionary, has been attempted, nor any imitation of the sounds by which it can claim to be a pronouncing dictionary. In glancing over many of the pages, we find some instances of omissions to give late information on pharmacological subjects, especially of their chemistry and composition, and we would have been pleased to find a more general introduction of common names in the alphabetical order; as for instance, "Calabar bean" and "coca," the most familiar terms to express these

drugs, are not found in place, but the first as "ordeal bean;" and the last under its generic term—*Erythroxylon*. We cannot find the word *dialysis*, in its more recent meaning as expressing liquid diffusion through a septum, either under that head or under osmose, exosmose, or endosmose. Doubtless in other departments the same may be noticed, but there is so much that is new and satisfactory that these may be overlooked.

The volume is well printed, and is bound in leather, as it should be, doing credit to the publishers. Though more specially suited to the physician's library, there is so much in it of interest to the pharmaceutist, that all who aim at completeness of information should be provided with this medical dictionary.

First Annual Report of the Alumni Association of the Philadelphia College of Pharmacy. Containing also the Valedictory Address delivered to the Graduating Class of 1865, by Edward Parrish, Prof. of Materia Medica in the College. Philadelphia: 1865, pp. 34.

This first of a series of annual reports commences a new era in the history of the graduates of the Philadelphia College of Pharmacy. As hinted at in our March number, the Association met at the Hall of the Philadelphia College of Pharmacy, on Thursday the 9th of March, 1865, William C. Bakes presiding, Hiram Gold, Secretary. From the minutes it appears that twenty-one members were elected during the year, and a certificate of membership designed and partially executed. The President then addressed the meeting, and proposed that the new constitution, prepared by the Executive Board, should be substituted for the old one, then in force, which, after due discussion, was carried into effect. A Nominating Committee was then appointed, and the annual report of the Treasurer read and approved. After due consideration, it was resolved that all graduates of the Philadelphia College of Pharmacy, prior to 1850, be admitted members of the Association, with all the rights and privileges thereunto appertaining, without the payment of any annual dues.

The second session was held on Saturday, March 11th; the President in the Chair. The roll was called; the minutes read and approved, and the Report of the Committee on Nominations called for, which was as follows:

For *President*,	Thomas S. Wiegand,	Class 1844.
First Vice-President,	Charles L. Eberle,	" 1859.
Second Vice-President,	Ferris Bringhurst,	" 1857.
Recording Secretary,	William C. Bakes,	" 1855.
Corresponding Secretary,	Alfred Mellor,	" 1863.
Treasurer,	Richard M. Shoemaker,	" 1862.

Executive Board.

George W. Eldridge,	1863.	E. C. Jones,	1864.
Henry C. Croft,	1864.	D. L. Witmer,	1862.
A. P. Brown,	1862.	J. H. C. Simes,	1864.

The report, which was signed by its chairman, Albert E. Ebert, of Chicago, was accepted, and an election ordered, which resulted in the election of the nominees.

In the absence of the President elect, Mr. Eberle took the chair. A vote of thanks to the retiring officers was passed, and, after some other business, Mr. Bakes offered the following:

"*Whereas*, As Graduates of a time-honored Institution, we feel the warmest interest in its future welfare and usefulness, and deem it no less a privilege than a duty to use every effort to secure for our *Alma Mater* the position to which she is entitled; and

"*Whereas*, Many of us have long cherished the idea of establishing a Practical School in connection with our College, where the branches of Pharmacy and Chemistry might be more thoroughly acquired, therefore,

"*Be it resolved*, That a sinking fund be created for this purpose out of the surplus funds of the Association; and that a committee be appointed by the Executive Board, to be known as the Trustees of Sinking Fund, whose duty it shall be, to take charge of, and solicit subscriptions to, this fund, and invest the same as they may judge safe and profitable, until a sufficient amount shall have been acquired to aid in the accomplishment of the end in view."

After free discussion the preamble and resolution were unanimously adopted. The preparation of voluntary essays for reading at the next annual meeting was considered, and nine members agreed to produce such papers. Prof. Parrish being present was invited to address the meeting, which he did in favor of the proposed objects. The Secretary was requested to prepare the annual report, submit it to the Board, and, if approved, to have it printed, together with the Constitution, the proceedings, list of members, and the Valedictory Address; when the meeting adjourned. The idea of establishing a practical school of Chemistry and Pharmacy under the auspices of our College has long been entertained, but the great expense attending its execution in a manner creditable to the College has rendered it inadmissible heretofore to take any steps to effect it. Should the measures now being instituted by the Alumni prove adequate to its accomplishment, results highly favorable to their efforts and creditable to the institution may be looked for. The inability of the College, in its present scheme of tuition, to afford practical instruction, has prevented it from insisting on so thorough a preparation as would be best for its reputation, necessarily leaving to the several preceptors of students the important business of practical familiarity with manipulation and laboratory work in general, and confining its teaching to lectures and such practical illustrations as can be presented to the

eye in passing. At the annual meeting of the College a resolution was passed requesting the Board of Trustees to give the idea consideration.

The Pharmaceutists' and Druggists' Practical Receipt Book, with a Glossary of Medical Terms, and a copious Index. By THOMAS J. BRANSTON. Philadelphia: Lindsay & Blakiston. 1865. Pp. 307. Duo.

This is another added to the list of "Druggists' Receipt Books," and claims merit on the ground that it consists of *officinal* formulæ mixed up alphabetically with popular and other recipes, used, or which may be used, by druggists. In our opinion, it is calculated to do more harm than good, by presenting only the obsolete recipes of the late London Pharmacopœia to the American apothecary and druggist, who is required to use our own Codex. As a collection of miscellaneous recipes, it is all well enough; but we protest against presenting "as preparations of the Pharmacopœia" those which have no authority here or in England at this time.

Alphabetical Index to Braithwaite's Retrospect. Embracing parts one to fifty, 1840—1865. Comprising twenty-five years of republication. New York: Published by Stringer & Townsend. 1865. Pp. 247, octavo.

This volume will be received with satisfaction by all readers of Braithwaite, as well as by all who have occasion to make researches on medical subjects, as greatly facilitating the labor of referring to the numerous volumes of this series.

By possessing this "General Index," any physician can, in a short time, ascertain whether wanted information can probably be found in the Retrospect. Price, $1 in paper; $1 75 in sheep, free of postage.

An Obituary Notice of Dr. William Darlington; Read before the American Philosophical Society, Feb. 19, 1864. By T. P. James. From the Author.

We have already published an obituary notice of this excellent man and eminent botanist, and receive with pleasure this biographical sketch for reference.

Nordamericanische, Deutsch Medicinische Zeitschrift, für Praktische Heilkunde. Zweimonatlich. Herausgeben von W. Meisburger, M. D. Buffalo, N. Y., vol. i. No. 1, April, 1865. (The North American German Medical Times.)

This periodical is commenced with the view of offering to German physicians a substitute for the German journals, the high price of which at present prevents them from being imported. The Editor thinks, by a careful selection of articles, he can give those best suited to the German-American reader, excluding those numerous papers having but little bearing on the practice of medicine.